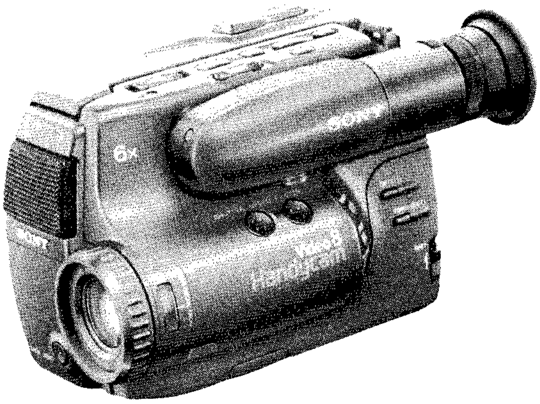
CCD-TR45E

SERVICE MANUAL

AEP Model
UK Model
E Model
Australian Model



Handycam

FL MECHANISM

For MECHANISM ADJUSTMENTS, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL II" (9-972-705-11).

SPECIFICATIONS

System

Video recording system	Four Rotary heads, Helical scanning FM system
Audio recording system	Rotary head, FM system
Video signal	PAL colour, CCIR standards
Usable tape	8 mm video format tape
Tape speed	SP mode: Approx. 20.051 mm/sec LP mode: Approx. 10.058 mm/sec
Recording/playback time	SP mode: 1 hour 30 min (P5 – 90) LP mode: 3 hours (P5 – 90)
Fast forward/rewind time	Approx. 8 min. 30 sec (P5 – 90)
Image device	CCD (Charge Coupled Device)
Viewfinder	Electronic viewfinder (black and white)
Lens	Combined 6 × power zoom lens f = 7 – 42 mm, F2.0 with macro Filter diameter: 37 mm
Auto focus system	TTL
Minimum illumination	7 lux (F 2.0)
Illumination range	7 lux – 100,000 lux (0.7 – 9,294 footcandles)
Recommended illumination	More than 150 lux (13.9 footcandles)
Aperture correction	Automatic

– Continued on next page –

MICROFILM

8 VIDEO CAMERA RECORDER
SONY®

Input and output connector

AEP, UK MODEL

Video output	Phono jack (1) 1 Vp-p, 75 ohms unbalanced sync negative
Audio output	Phono jack (1) –7.5 dBs, (at output impedance 47 kilohms) impedance less than 2.2 kilohms

Australian, E MOEL

Video input/output	Selectable with the INPUT/ OUTPUT selector Phono jack (1) 1 Vp-p, 75 ohms unbalanced sync negative
Audio input/output	Selectable with the INPUT/ OUTPUT selector Phono jack (1) Input: –7.5 dBs, input impedance more than 47 kilohms Output: –7.5 dBs, (at output impedance 47 kilohms) impedance less than 2.2 kilohms
RFU DC OUT	Special minijack, 5 V DC
REMOTE jack	Stereo mini-minijack
MIC jack	Minijack, –66 dBs, low impedance with 2.5-3 V DC output, impedance 6.8 kilohms

General

Power requirements	On battery mounting surface 6.0 V (battery pack) 7.5 V (AC power adaptor) 9.0 V (alkaline batteries)
Power consumption	4.8 W (camera recording) including the viewfinder
Installation	Vertically, horizontally
Operating temperature	0°C to 40°C
Storage temperature	–20°C to +60°C
Dimensions	Approx. 108 × 104 × 168 mm (w/h/d)
Weight	Approx. 700 g excluding the battery and cassette
Microphone	Electret condenser microphone

Design and specifications are subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/ EEC regarding interference suppression.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splasher and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SERVICE NOTE

[SEMICONDUCTOR FOR CORRECTION LIST DISPLAY]

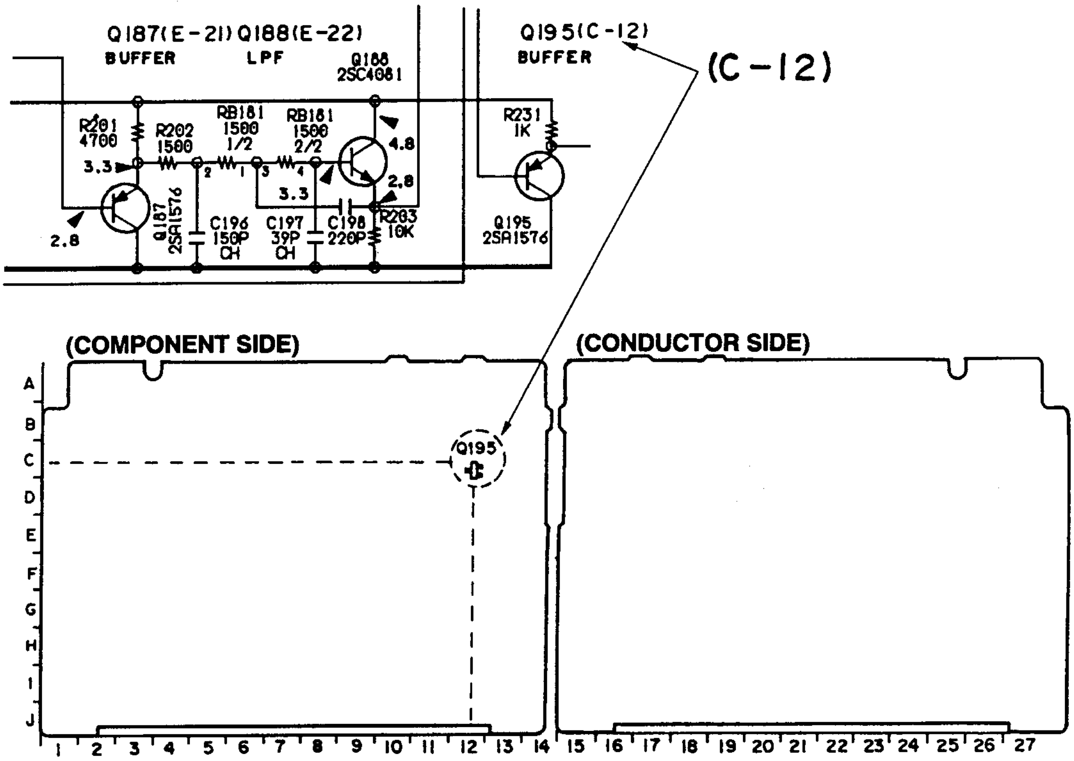
Part code and part name of the semiconductor for correction of the print board is discribed in the space of each print figure. Use this list when ordering parts.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]

The parts location diagram for the power supply which are often checked and replaced when repairing the fuse and IC link and so on. (See pages 90 and 154.)
This diagram is useful for repair.

[SEMICONDUCTOR LOCATION]

In this service manual, the mounted locations of the semiconductors (IC, transistor, diodes) are indicated in red sa shown below. This enables to find the location on the board easily when servicing.



Q187(E-21) Q188(E-22)
BUFFER
LPF
Q188 2SC4081
R201 4700
R202 1500
RB181 1500 1/2
RB181 1500 2/2
3.3
4.8
2.8
2.8
3.3
Q187 2SA1576
C196 150P CH
C197 39P CH
C198 220P
R203 10K
Q195(C-12)
BUFFER
R231 1K
Q195 2SA1576
(C-12)
(COMPONENT SIDE)
(CONDUCTOR SIDE)
Q195
A
B
C
D
E
F
G
H
I
J
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[HEAD CLEANING]

After an extended period of use the video image may become indistinct or may not appear at all during playback of a tape. The cause of this usually are dirty video heads. For remedy, cleaning of the heads is required.

Check for Head Clogs During Recording

① Use a blank tape, record a short section, then press the stop button to stop.
② Set to recording mode again.
③ If the [✣] mark is flashing in the viewfinder at this time, head clogs are occurred.

Check During Playback of a Tape

① Play back a pre-recorded tape and display the image on a TV screen.
② If there is no sound and the image is unstable, no image appears on the screen, or tape transport is unstable, head clogs are occurred.

Remedy

[Cleaning method using a cleaning tape]

- Use the Cleaning Tape V8-25CLH. (Please follow the instructions attached to the cleaning tape.)

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There is the color reproduction standard frame at the back of the book.

SECTION 1
GENERAL

This section is extracted from instruction manual. (AEP Model)

Introduction

Overview of the CCD-TR45E

The CCD-TR45E Video 8 Handycam is a compact colour video camera/recorder (camcorder).
You can use it to shoot the pictures you want and play them back on your television set.
The camcorder uses 8 mm video format cassettes.

Who this Manual is for

This manual is for you. You can use this manual to find exactly the information you need, whether you are familiar with video equipment or not.

How the Manual is Organized

The first section of the manual explains the preliminary steps necessary to prepare for shooting and playing back.

Other sections include shooting procedures that show you how to use the various features and functions of your camcorder. If you are beginner, start with "Recording with automatic adjustments." If you are very familiar with camcorders, try to shoot your picture with manual adjustments as well as automatic adjustments.
If you want to record right away, see p. 9, 10, 19 through 22.

The manual also includes information on how to play back a picture on a TV and how to edit your original 8 mm tape onto another video tape.

If you have any problems during operation, see the "Trouble Check" section.

How this Manual Works

Use the information below to help you follow the instructions in this manual.

- Controls and settings on the camcorder are shown in capital letters:
  ex. Set POWER to CAMERA.
- The letter in an illustration corresponds to the letter in the text:
  ex. (A-1) or **[a]**
- The step numbers in all illustrations correspond to the step numbers in the text.
- Notes and caution massages are set off with lines.

ex.

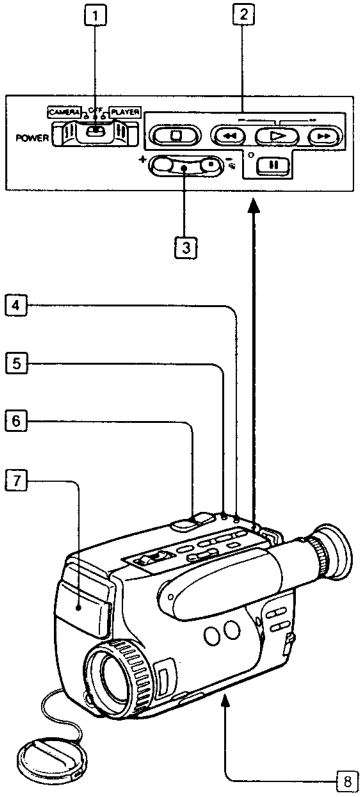
Note on battery life
Battery will not last as long in cold places.

Supplied Accessories

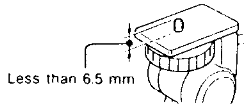
The camcorder is packed together with the following units. Check to see that everything is contained in the package.
(*Attached to the camcorder)

- Battery pack NP-55 (1)
- AC power adaptor AC-V30 (1)
- Lithium battery CR2025 (1)
- RFU adaptor RFU-90E (1) or RFU-89EA (1)
  With the RFU-89EA, an aerial selector and a screwdriver are supplied.
- Cassette tape (1)
- Step-up-ring ϕ37 mm→ϕ46 mm (1)
- Shoulder strap (1)
- Jack cover (1)*
- Lens cap (1)*
- Handy manual

(A-1)



(A-2)



Identifying the Parts

For details on the use of each control, refer to the pages indicated in the circle.

(A-1)

1 **POWER switch**
CAMERA: For camera recording
PLAYER: For playing back or editing tapes
OFF: Power off

2 **Tape transport buttons and pause indicator**
▷ (playback)
►► FF (fast forward)
◄◄ REW (rewind)
□ (stop)
❚❚ (pause)
During the pause mode the indicator lights.

3 **EDITSEARCH ⊜ button ㉓, ㉔, ㉕**

4 **Caution lamp**
Blinks when a problem has occurred.

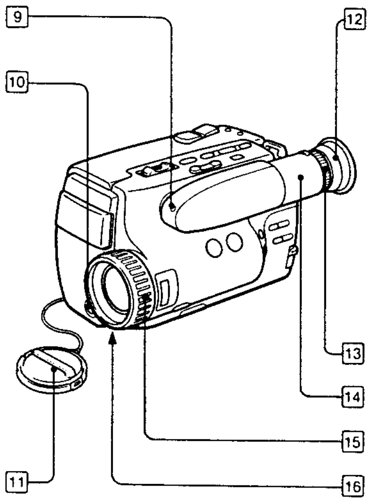
5 **DEW lamp**
Blinks when moisture has condensed inside the unit.

6 **Power zoom button ㉗, ㉛, ㉜**

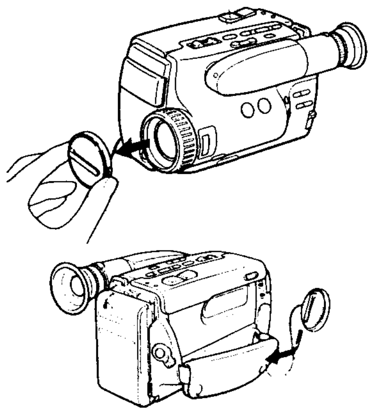
7 **Built-in microphone**

8 **Tripod receptacle**
Note when attaching a tripod other than Sony's, the length of the camera mounting screw must be less than 6.5 mm. Otherwise the screw may damage the inner parts of the camera. **(A-2)**

(A-3)



(A-4)



Identifying the Parts

(A-3)

9 Camera recording/battery lamp
Lights during camera recording. It blinks when the battery is exhausted.

10 BACK LIGHT button ㉚

11 Lens cap
To remove the lens cap, squeeze the sides as shown.
Hook it on the grip strap. **(A-4)**

12 Eyecup

13 Viewfinder lens adjustment ring
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.

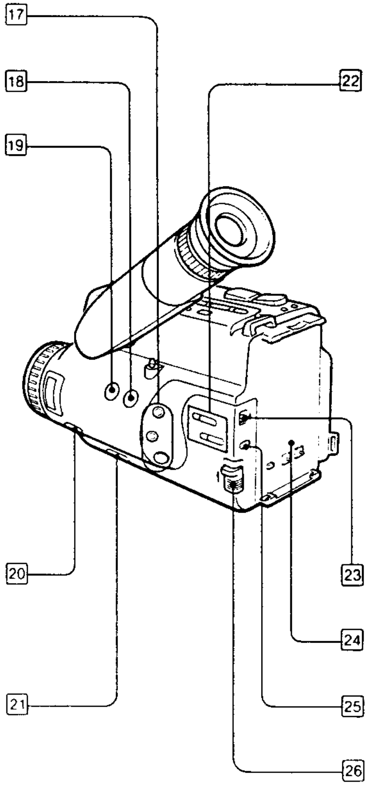
14 Viewfinder
The picture being recorded or played back can be monitored in monochrome here. Also marks such as the caution indicators and function modes appear in here.

15 Focus ring ㉗

16 ℒ REMOTE control jack (stereo mini-minijack)
Connect a wired remote control unit, an editing controller, or other equipment here.

About ℒ (LANC)
ℒ stands for Local Application Control Bus System. The connector is used for controlling the tape transport of video equipment and the peripherals connected to it. This connector has the same function as the connectors indicated as CONTROL L or REMOTE.

(A-5)



Identifying the Parts

(A-5)

17 Superimpose buttons ㉝
MEMORY button
COLOR button
SUPERIMPOSE button

18 FOCUS button ㉗
Used for manual focusing.

19 SHUTTER SPEED button ㉙
Used to select the shutter speed.

20 Macro set button ㉜

21 Lithium battery compartment ⑰

22 DATE and TIME buttons
Press to display or turn off the date or time.

23 REC MODE (recording mode)/EDIT switch ㉑, ㊴
Switch it depending on the operating mode.

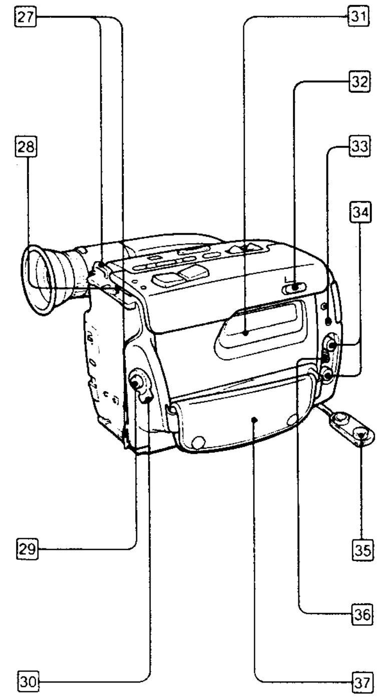
Mode	Recording	Playback	Editing
Setting	REC MODE SP LP	EDIT	EDIT
Function	Recording mode switch	EDIT switch	

24 Battery mounting surface

25 COUNTER RESET (CAMERA) button ㉓

26 BATT (battery eject) knob ⑪

(A-6)



(A-6)

27 **Hooks for shoulder strap**
Attach the shoulder strap.

28 **EJECT (cassette eject) button ⑲**

29 **START/STOP button**
Press to start and stop camera recording.

30 **STANDBY switch**
Turn to STANDBY to set the camcorder to the standby mode.

31 **Cassette compartment**

32 **Lid lock**
Slide in the direction of the arrow to open the lid.

33 **MIC jack (PLUG IN POWER) (minijack)**
Connect a Sony "Plug-in-power" microphone (not supplied). This jack also supplies power to it.

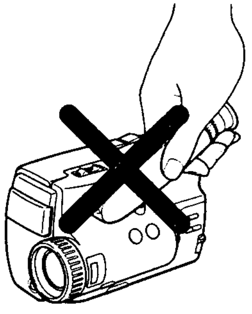
34 **V/A (video/audio output) jacks (phono jacks)**

35 **Jack cover**
Cover the V/A jacks when not in use.

36 **RFU DC OUT (RFU adaptor DC output) jack (special minijack)**
Attach the supplied RFU adaptor here if you use it.

37 **Grip strap**
Adjust the length so that your thumb can easily manipulate the START/STOP button.

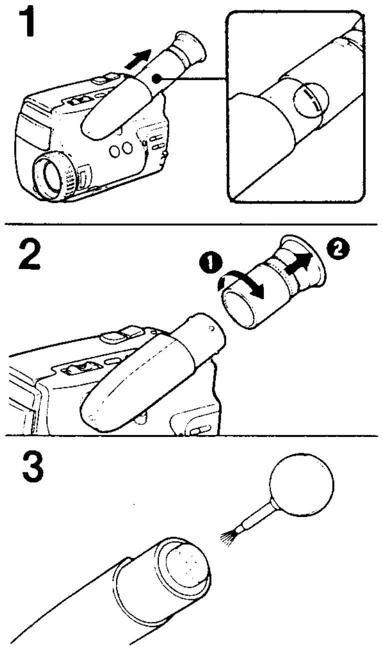
(A-7)



Caution (A-7)

Do not pick up the unit grasping the viewfinder.

(A-8)



To remove dust from inside the viewfinder (A-8)

1 **Pull out until the mark appears.**

2 **Turn counterclockwise until the viewfinder stops and pull it out.**

3 **Clean the surface of the cover with a blower.**

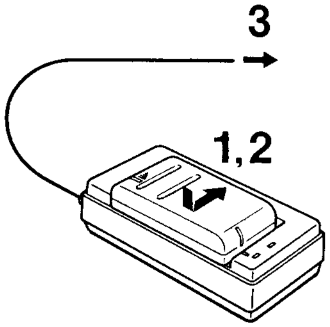
Connecting the Power Sources

First Choose the Power Source

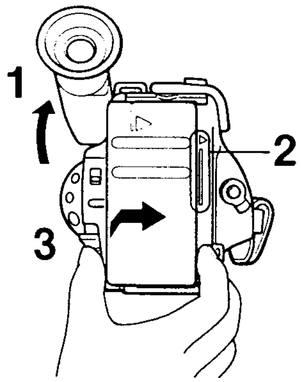
Place	Power source	Accessory to be used
Outdoors	Battery pack	Battery pack NP-55 (supplied), NP-66H, NP-77, NP-77H
	Alkaline batteries	Battery case EBP-TR, EBP-55, EBP-77
Indoors	House current	AC power adaptor AC-V30 (supplied), AC-V55
In the car	12 V or 24 V car battery	DC pack DCP-77, DCP-55 (DCC-16B car battery cord supplied)

Note on power source
Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If disconnected accidently, supply the power again immediately.

(B-1)



(B-2)



Connecting the Power Sources

Using the Battery Pack

Step 1

Charge the battery pack. (B-1)

1 **Align the right side of the battery pack with the line on the AC power adaptor.**

2 **Slide in the battery pack to the right.**

3 **Connect the AC power adaptor to a wall outlet.**
Charging will begin.

Required charging time

NP-55 (supplied)	NP-66H	NP-77	NP-77H
60	110	120	140

(Approx. minutes using AC-V30)

See the instruction manual of the AC power adaptor for details.

Step 2

Mount the battery pack on the camcorder. (B-2)

1 **Lift up the viewfinder.**

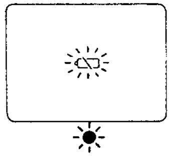
2 **Align the right side of the battey pack with the line on the camcorder.**

3 **Slide the battery pack to the right.**

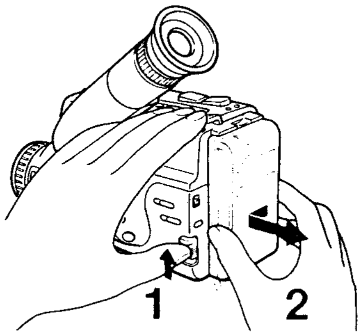
Note

Make sure the battery fits completely on the mounting surface of the camcorder. Imperfect fit may damage the projections on the camcorder

(B-3)



(B-4)



Connecting the Power Sources

Battery life

A fully charged battery pack lasts for:

NP-55 (supplied)	NP-66H	NP-77	NP-77H
70	120	140	170

(Approx. minutes, continuous recording indoors)

When the battery becomes weak (B-3)

The ⊏⊐ indication and red lamp blink slowly in the viewfinder. Replace the battery pack with a fully charged one when they blink rapidly.

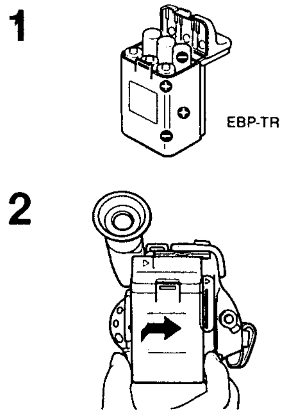
To remove the battery pack (B-4)

While sliding up the BATT knob, slide the battery pack to the left and pull it out as illustrated.

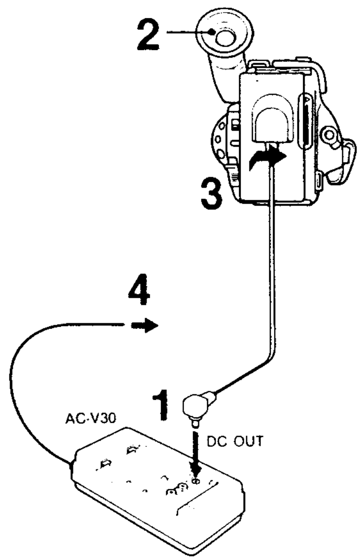
Other options for charging

- AC-V55 AC power adaptor: You can charge two battery packs one after another.
- DC-V30 car battery charger: You can charge a battery by connecting the car battery charger to the cigarette lighter socket. This battery charger can also supply power for Sony 8 mm video equipment that operates on a battery pack.
- NP-4000 rechargeable battery pack: You can use it for long outdoor recording. The DCP-55 DC pack is required for the connection (not supplied).

(B-5)



(B-6)



Using Alkaline Batteries

(B-5)

The EBP-TR, EBP-55 or EBP-77 battery case is required (not supplied.)

1 **Insert R6 alkaline batteries into the battery case.**
6 batteries for EBP-TR and EBP-55 and 12 batteries for EBP-77

2 **Attach the case in the same way as the battery pack.**

Battery life

	EBP-TR	EBP-55	EBP-77
Battery life	70	70	180

(Approx. minutes, continuous recording indoors)

Note on using the EBP-TR battery case
Be sure to remove the battery case from the camcorder when replacing the batteries.

Notes on battery life
- Batteries will not last as long in cold places.
- No indication appears in the viewfinder when the batteries are weak.

Using House Current

(B-6)
Use the supplied AC-V30 AC power adaptor.

1 **Insert the connecting cord supplied with the AC-V30 AC power adaptor into the DC OUT jack on the AC power adaptor.**

2 **Lift up the viewfinder.**

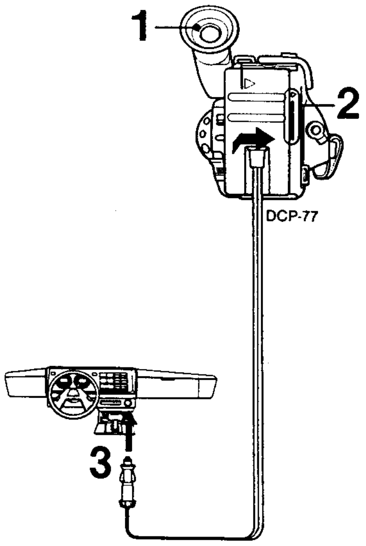
3 **Align the right side of the connecting plate with the line on the camcorder, and slide it in to the right.**

4 **Connect the AC power adaptor to a wall outlet.**

We recommend the use of the AC power adaptor while viewing the playback picture on the TV or editing tapes, as you do not need to worry about running out of power.
See the instruction manual of the AC power adaptor for details.

Other option
The AC-V55 AC power adaptor can also be used.

(B-7)



Using Car Battery

(B-7)

The DCP-77 DC pack is required (not supplied).

1 **Lift up the viewfinder.**

2 **Align the right side of the DC pack with the line on the camcorder, and slide it in to the right.**

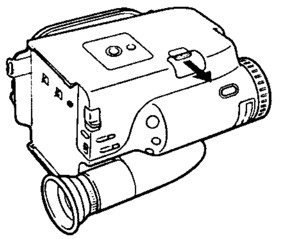
3 **Connect the cord to the cigarette lighter socket of a car (12 V or 24 V).**

To remove the DC pack
While sliding up the BATT knob on the camcorder, slide the DC pack and pull it out.

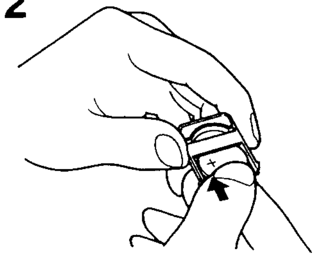
Other options
- The DCP-55 DC pack can be used.
- You can also operate this camcorder on a 12 V or 24 V car battery using the AC-V55 AC power adaptor and the DCC-16AE car battery cord.

(D-1)

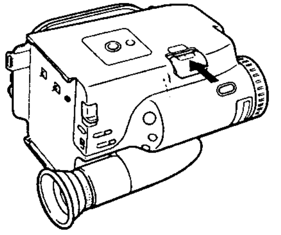
1



2



3



Setting the Date and Time

Inserting the Lithium Battery

(D-1)

This camcorder uses a lithium battery to activate the clock and to keep a title in memory. Before operating it for the first time, install the supplied lithium battery.

1 **Pull out the lithium battery holder from the bottom of the camcorder.**

2 **Install the supplied CR2025 lithium battery with the + side facing out.**

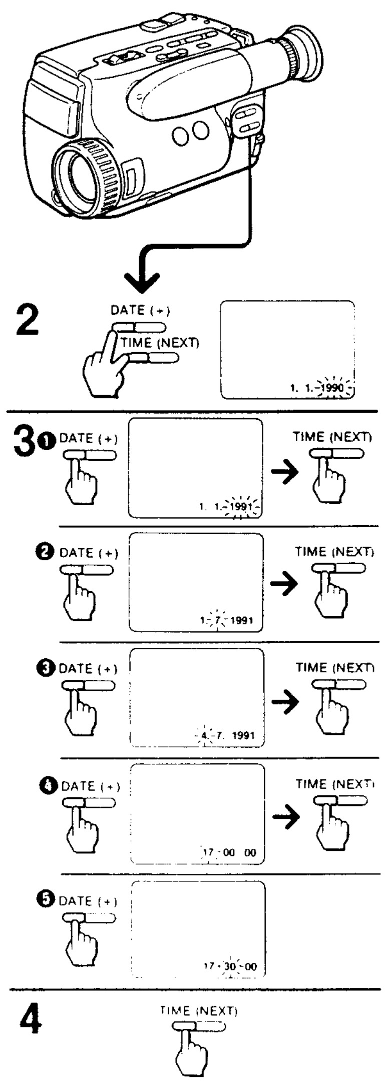
3 **Put the lithium battery holder back into the camcorder.**

To change the lithium battery
Pull out the lithium battery holder from the camcorder, and remove the lithium battery and insert a new one.

Note on battery life
The battery lasts for approximately 1 year under normal operation. When the lithium battery becomes weak, the time indication blinks in the viewfinder for about 5 seconds when POWER is set to CAMERA. **When this happens, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.** While replacing the lithium battery, keep the battery pack or other power source attached. If the battery pack or other power source was not attached while replacing, readjustment of the date, time and title is necessary.

Cautions
- Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.
- Wipe the battery with a dry cloth to assure good contact.
- Be sure to install the battery with the correct polarity.
- Do not hold the battery with metallic tweezers as a short-circuit may occur.
- Battery may explode if mistreated. Do not recharge, disassemble, or dispose of it in a fire.

(D-2)



Setting the Date and Time

(D-2)

1 **Make sure that a power source is connected, set POWER to CAMERA, and turn STANDBY to STANDBY.**

2 **Press DATE and TIME simultaneously for more than 3 seconds until the date indication appears in the viewfinder.**
DATE now functions as + (to advance numbers) and TIME functions as NEXT (to execute).

3 **Set the year, month, day, hour and minute, in that order.**
First adjust the blinking digits with + and then press NEXT.

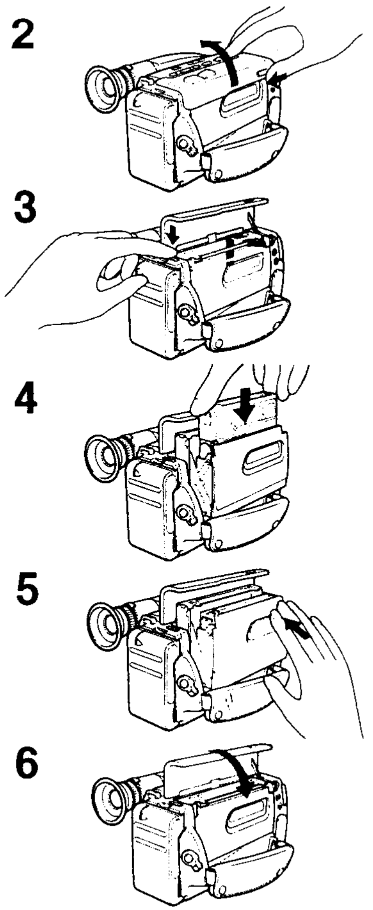
4 **Press NEXT to set the second.**
The clock starts operating.

To correct the date and time setting
Repeat steps 2 to 4.

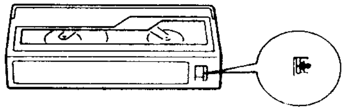
To advance the digits faster
Keep + pressed.

To check the preset date and time
Press DATE or TIME. When you press the same button again, the indication goes out.

(E-1)



(E-2)



Inserting a Tape

Inserting a Tape

(E-1)

1 **Make sure a power source is connected.**

2 **While sliding the lid lock in the direction of the arrow, lift up the lid fully.**

3 **Press EJECT.**
The lip of the cassette compartment will automatically lift up and open toward you.

4 **Insert the tape with the window facing out.**

5 **Press the PUSH mark on the cassette compartment cover to close it.**

6 **Close the lid.**

Ejecting the Tape

1 Make sure that a power source is connected.
2 While sliding the lid lock in the direction of the arrow, lift up the lid fully.
3 Press EJECT.
The lip of the cassette compartment will lift up and automatically open toward you.
4 Take out the tape and press the PUSH mark on the comparment to close it.
5 Close the lid.

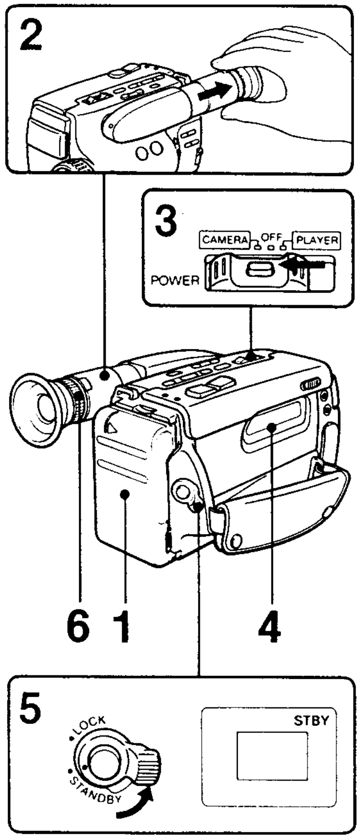
Preventing Accidental Erasure

(E-2)

Slide out the red tab on the cassette to protect the recording.
To re-record on this tape, slide the tab back in.

Notes on handling tapes
- Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape, or if the tab is out or in, etc.
- Store tapes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.

(F)



Adjusting the Viewfinder Lens

The position of the viewfinder lens for optimum vision varies depending on the person. Adjust when using the first time, or when using after someone else. (F)

1 **Make sure a power source is connected.**

2 **Pull the viewfinder out until it clicks.**

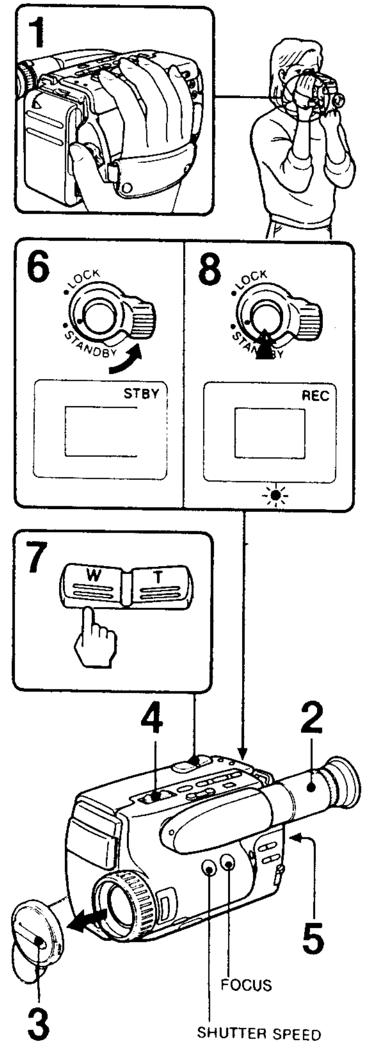
3 **While pressing the green button, set POWER to CAMERA.**

4 **Insert a tape.**

5 **Turn STANDBY to STANDBY.**

6 **Turn the viewfinder lens adjustment ring so that the "STBY" display in the viewfinder comes into sharp focus.**

(G-1)



Recording a Picture Using Automatic Adjustments

Before recording "once-only" events, we strongly recommend making a trial recording and checking that everything is working properly.

(G-1)

1 **Hold the camcorder as illustrated.**
Put your hand through the grip strap and check that your thumb can easily touch START/STOP.

2 **Make sure that the viewfinder is pulled out.**

3 **Remove the lens cap.**

4 **While pressing the green button, set POWER to CAMERA.**

5 **Set REC MODE to LP (long play) or SP (standard play), according to the length of your planned recording.**

6 **Turn STANDBY to STANDBY.**
"STBY" and the autofocus frame appear in the viewfinder.
If the autofocus frame does not appear, press FOCUS.
If the shutter speed indication appears in the viewfinder, press SHUTTER SPEED repeatedly until it goes out.
The camcorder is now in the standby mode, and focus is adjusted automatically inside the frame (autofocus adjusting range). Do not turn or stop the focus ring forcibly.

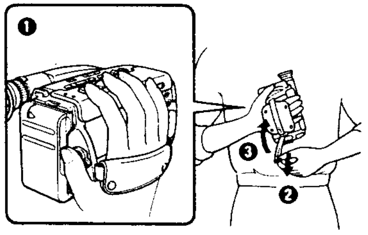
7 **Keep the W side of the power zoom button pressed.**

8 **Press START/STOP.**
"REC" appears and the red lamp lights up in the viewfinder. The camcorder is now recording.

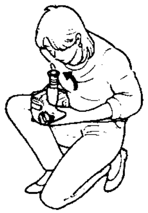
To pause (to stop momentarily)
Press START/STOP again.
"STBY" appears in the viewfinder. The camcorder is in the standby mode again.

To stop
Turn STANDBY to LOCK and set POWER to OFF

(G-2)



(G-3)



How to fit the grip strap (G-2)
In step 1 on the previous page, hold the camcorder against your body (❶) and pull the grip strap upward (❷, ❸).

For low-position recording (G-3)
The viewfinder can be turned 90 degrees up. It can be used in either the pushed-down or pulled-out position.

Notes on recording
- To record from the beginning of the tape, run the tape for about 15 seconds before recording. This will avoid missing the starting point when the tape is played back.
- If POWER is moved during recording, the tape will stop.
- When moving from indoors to outdoors, or vice versa, turn STANDBY to STANDBY and point the camcorder at a white object for about 10 seconds so that the tone of colours is properly adjusted.

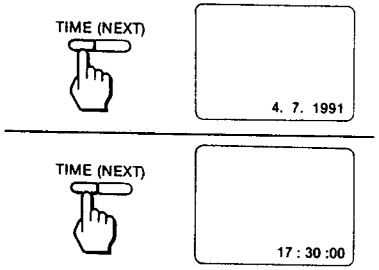
Note on the standby mode
If you leave the camcorder in the standby mode for 5 minutes or more, the camcorder will be turned off automatically. To resume the standby mode, turn STANDBY to LOCK once and turn it to STANDBY again. To start recording, press START/STOP directly.

Note on light sources
If you are shooting a subject under bright conditions just after shooting in a dark place, the picture may not appear in the viewfinder. In this case, point the camcorder in another direction.

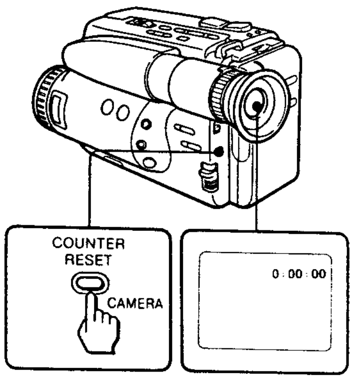
Recording mode
8 mm video format cassette records in the SP (standard play) mode and LP (long play) mode and can play back in the SP and the LP modes. The quality of the recording picture in the LP mode, however, will not be as good as that in the SP mode.

Note on PCM recording and playback
PCM recording or playback is not possible with this camcorder.
The PCM sound recorded or after-recorded with another video recorder cannot be played back with this camcorder.

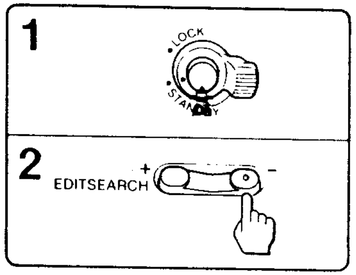
(G-4)



(G-5)



(G-6)



To Record Date or Time

(G-4)

During camera recording or when in the recording pause mode, press DATE for date indication or TIME for time indication.
The date or time displayed in the viewfinder is recorded with the picture.

To stop recording date or time
Press DATE or TIME again.
The picture recording continues.

To Use the Tape Counter (for Camera Recording)

(G-5)

During recording, the digits on the counter in the viewfinder indicate the actual recording time. To return to the counter "0:00:00" point, press COUNTER RESET (CAMERA).

Notes on the tape counter
- The counter does not operate during playback.
- The counter reading and the actual time may not correspond exactly. Use the counter as a guide.

To Check the Last Portion of the Previous Recording

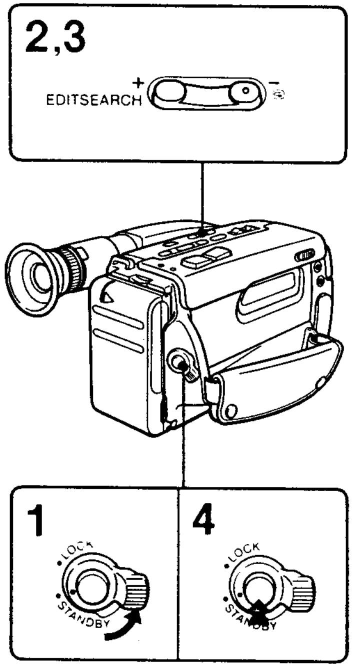
(G-6)

1 **Set the camcorder in the recording pause mode by pressing START/STOP.**

2 **Press – side of EDITSEARCH (⊜) momentarily.**
The last few seconds of the recorded portion are rewound and then the recorded picture appears in the viewfinder. After a few seconds of playback, the camcorder goes back to the recording pause mode.

If the picture has not been recorded
The video heads may be contaminated. Clean the heads using the Sony V8-25CLH video head cleaning cassette or equivalent.

(G-7)



To Re-record a Previously Recorded Portion

(G-7)

1 **Turn STANDBY to STANDBY to set the camcorder to the standby mode.**

2 **Look in the viewfinder and find the point from where you want to begin the recording by:**
Keeping the + side of EDITSEARCH pressed to advance the picture at the normal playback speed, or the – side to reverse the picture.

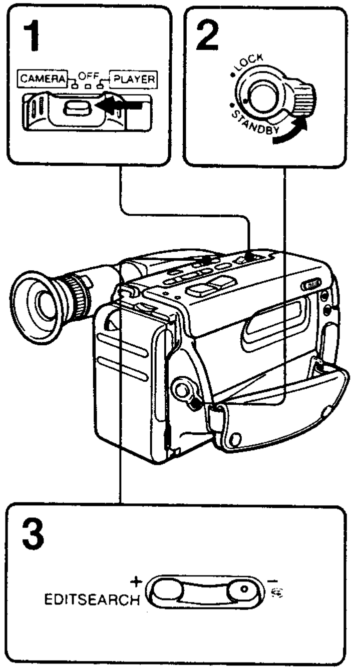
3 **At the desired point, release EDITSEARCH.**

4 **Press START/STOP to start recording.**

The picture is connected smoothly after the prerecorded portion even if STANDBY is turned up and down, or even if the power is turned off and on again, provided that the tape is not removed.

To stop
Turn STANDBY to LOCK.

(G-8)



Playing Back the Picture Instantly

(G-8)

You can check the recorded picture in the viewfinder. Sound is not heard.

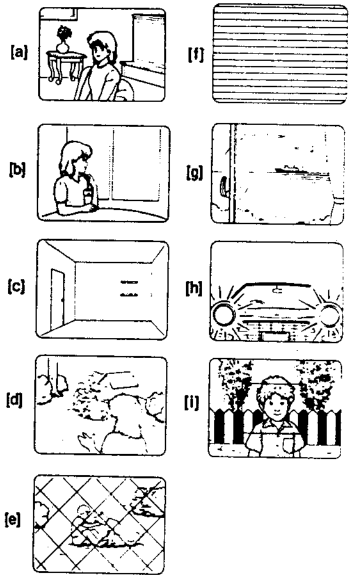
1 **While pressing the green button, set POWER to CAMERA.**

2 **Turn STANDBY to STANDBY.**

3 **Keep pressing the + or – side of EDITSEARCH to play back the picture.**
+ side: to view the playback picture
– side: to view the playback picture in reverse

To stop playback
Release EDITSEARCH.

(H-1)



Manual Focusing

Using the autofocusing, you can easily get a focused picture under most shooting conditions. But manual focusing is recommended in the following cases.

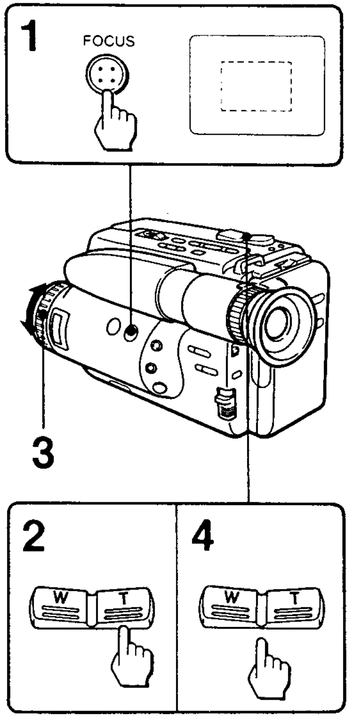
[a] to [i] correspond to the illustrations. (H-1)

[a] Insufficient light
[b] Too much brightness behind the subject
[c] Subject with little contrast — wall, sky, etc.
[d] One subject is close; the other is in the center, but at a distance
[e] Subjects beyond nets, etc., or another subject passes in front of the camcorder
[f] Horizontal stripes
[g] Subject through frosted glass
[h] Bright subject or subject reflecting light
[i] High contrast behind the subject (the background may be focused)
[j] Under the following circumstances
- When using conversion lenses or effect filters
- When shooting a stationary subject using a tripod
- To save battery wear

Autofocusing does not function momentarily when:
- The setting of the shutter speed is changed.
- Backlight is adjusted manually.
- Lighting conditions change quickly.
- Zooming is done from wide-range to telephoto.

This camcorder keeps in focus by referring to the picture contrast, which is weak in the above situations.

(H-2)



Focusing Manually

(H-2)

1 **Press FOCUS.**
Make sure that the autofocus frame in the viewfinder goes out.

2 **Keep the T side of the power zoom button fully depressed to telephoto.**

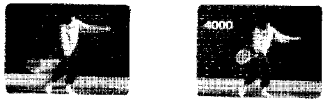
3 **Turn the focus ring to achieve sharp focus.**

4 **Set the desired shot length using the power zoom button.**
Keep the button pressed lightly to change the shot length slowly. Keep it fully depressed to change the shot length rapidly.

Some helpful hints

- When shooting in relatively dark places such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles after focusing in telephoto.
- When shooting a scene with lots of movement in bright light, keep the W side of the power zoom button pressed for wide-angle and set the focus ring to 2 m.

(I-1)



Setting the Shutter Speed

When a fast-moving subject is recorded at normal shutter speed, it may not be seen clearly when played back in the pause mode (still picture). This can be improved by increasing the shutter speed. The shutter speed, 1/50 (normal speed), 1/120, 1/1000 or 1/4000 of a second can be selected. (I-1)

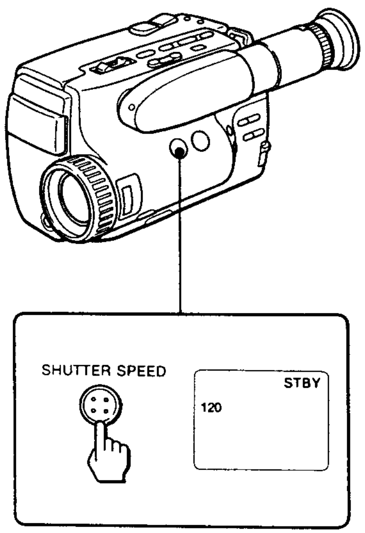
When recording at a high-speed shutter setting, record in a brighter place than usual.
Also, the depth of field in proper focus becomes shallow at a higher shutter speed. This is effective to record the main subject in sharp focus and the surroundings out of focus.

Recommended setting for your situation
Choose an appropriate shutter speed according to the situation, referring to the chart for examples.

Example use	Recommended shutter speed
• On clear days recording a golf or tennis swing (To view the hit ball clearly in the still picture mode) • Recording skiers	1/4000
• On overcast days recording a moving merry-go-round or roller coaster	1/1000
• Instead of the ND2 filter (To reduce the exposure level to about a half) • Recording indoor sports (for stable shooting)	1/120

When playing back the picture recorded at certain speeds
Use 8 mm video equipment with the clean still function to obtain a noiseless still picture.

(I-2)



Selecting the Shutter Speed

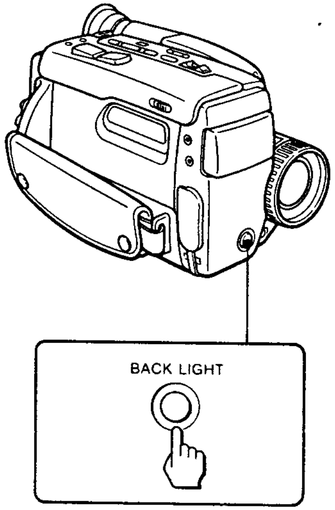
(I-2)

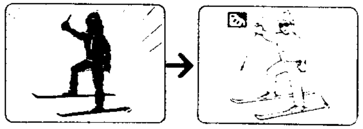
Press SHUTTER SPEED repeatedly until the desired shutter speed indication appears.
Each time you press the button, the indication changes as follows.

No indication (1/50) → 120 (1/120) → 1000 (1/1000)
4000 (1/4000) ←

Notes
- When you select a shutter speed 1/1000, record under sunlight or use a video light.
- When you record a TV screen with certain shutter speeds, the brightness of the recorded picture may vary.
- When you shoot a very bright subject at a faster shutter speed, a light vertical, belt-like line (smear) may appear on the screen.
- When you record at certain shutter speeds under a light discharged tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, the brightness of the recorded picture may vary (causing the picture to flicker).

(J)





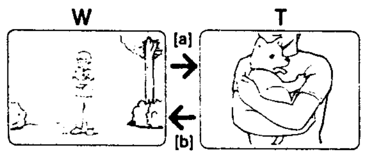
Shooting with Backlighting

In this camcorder, the exposure is automatically controlled. However, when shooting a subject that is backlit, that is, if the light source is behind the subject, use BACK LIGHT. **(J)**

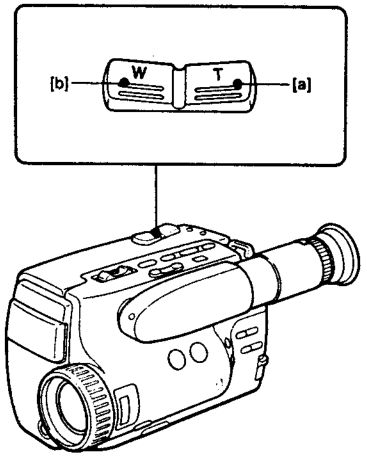
Press BACK LIGHT.
The ▨ indication appears.

After shooting
Be sure to release this adjustment setting by pressing BACK LIGHT again. (The ▨ indication goes out.)
Otherwise, the recorded picture will be too bright.

(K-1)



(K-2)



Zooming

The size of the subject in the screen can be changed. Use "zoom-in" for dramatic close-ups **[a]**. Use "zoom-out" for panoramic long shots **[b]**. Also use zooming to focus manually or to decide the shooting angle. Rapid zooming can be effected by keeping the power zoom button fully depressed. **(K-1)**

Smooth and Constant Zooming

(K-2)

Keep the T side of the power zoom button lightly pressed for telephoto (subject appears closer) **[a]** and the W side for wide-angle (subject appears farther away) **[b]**.

Rapid Zooming — To Create a Dramatic Effect

(K-2)

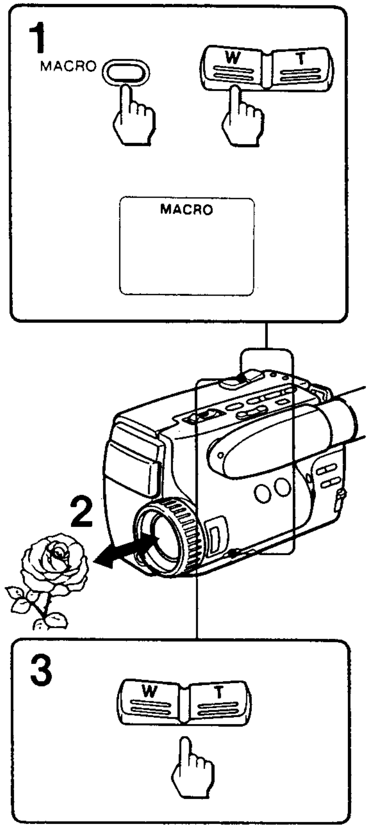
Keep the T side of the power zoom button fully depressed for telephoto **[a]** and the W side for wide-angle **[b]**.

Focal length of this camcorder
The focal length is 7 mm to 42 mm. This means approximately 50 mm to 300 mm when converted into the focal length of a 35-mm camera.

For more zooming effect
Use the Sony VCL-0637 or VCL-1437 conversion lens (not supplied). If you use a 46 mm conversion lens, attach it using the supplied step-up-ring. Auto focus, however will not function in that case.

When shooting with autofocusing
When you press the power zoom button for wide-angle, the focus ring will be fixed around the 2m position and may not exactly match the actual object-to-camera distance.

(L)



Close-Up (Macro)

Even small subjects, such as flowers, insects, and photographs, can literally fill the screen. **(L)**

1 **Keep the W side of the power zoom button fully depressed, pressing MACRO.**
The MACRO indication appears in the viewfinder.

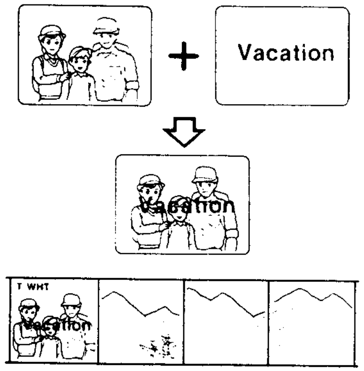
2 **Bring the camcorder as close as necessary to obtain the desired size of image.**
The subject can be as close as a minimum of 10 mm from the lens surface.

3 **Keep the power zoom button pressed lightly to focus sharply while the MACRO indication is displayed.**

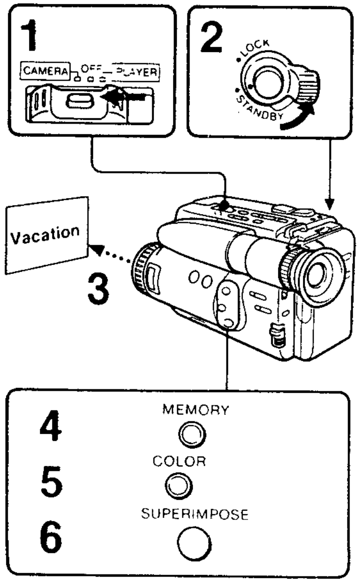
In the MACRO range, autofocusing does not function.

Notes
- When shooting in macro, the depth of field is very shallow. So pay attention to focusing. To keep the subject in focus, use a tripod.
- If the subject is closer than 10 mm, it cannot be brought into focus.

(M-1)



(M-2)



Recording a Title

You can superimpose your own hand-lettered message or illustration over the picture during recording or playback (editing). **(M-1)**

- One title can be stored.
- The colour of the title can be selected from 8 colours.

To make a desired title card, use a plain, white card and write a title using a dark colour and thick lines.

Before recording, store the title or illustration.

Storing a Title

(M-2)

Make sure that the lithium battery is installed.

1 **While pressing the green button, set POWER to CAMERA.**

2 **Turn STANDBY to STANDBY to set the camcorder in the standby mode.**

3 **Point the camcorder to the title card and adjust the focus.**
To focus the subject, use the close-up function.

4 **Press MEMORY to store the title.**

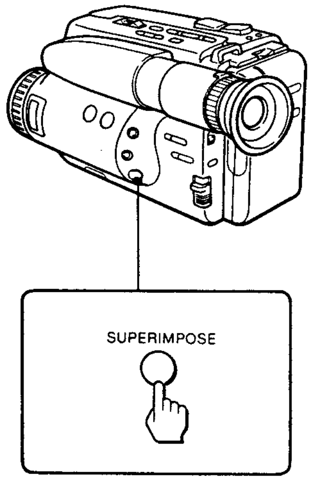
5 **Press COLOR to select the title colour.**
Each time you press the button the indication changes as follows.
WHT(white) → BLUE → GRN(green) → CYAN
↑ ↓
BLK(black) ← YEL(yellow) ← VIO(violet) ← RED

6 **Press SUPERIMPOSE to turn off the title.**

To check the title
Press SUPERIMPOSE in the standby mode.
To turn off the title, press the button again

About memory back-up
The camcorder uses a lithium battery (located on the bottom of the unit) to keep the title in memory. The battery life is approximately 1 year under normal operation.

(M-3)



Superimposing the Title on a Picture

(M-3)

1 **During recording, press SUPERIMPOSE at the point from which you want to insert the title.**
The title appears. During recording, the title is recorded.

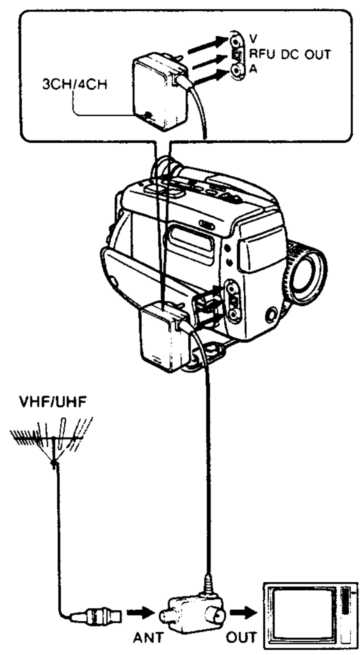
2 **Wait for a while and press SUPERIMPOSE again.**
The title goes out.

When recording the title at the beginning
We recommend the following method:
1 Set the camcorder in the standby mode.
2 Press SUPERIMPOSE.
The title appears.
3 Press START/STOP.
The title is recorded.
4 Wait for a while and press SUPERIMPOSE again.
The title goes out.

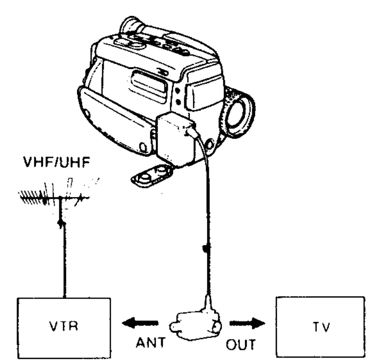
About the colour indication

- The colour indication in the viewfinder is not recorded.
- You can change the title colour by pressing COLOR even after displaying the title.

(N-1)



(N-2)



Connections for Playback

To view the playback picture on the TV screen, the camcorder and the TV and/or VTR must be connected properly. Check the type of your TV, and make the necessary connections.

We recommend use of the AC power adaptor as a power source.

Connecting a TV without Video/Audio Input Jacks

For the customers supplied with the RFU-90E

Step 1

Connecting an RFU adaptor and a TV

- Use the supplied RFU adaptor.
- Make sure that the TV is turned off.

Connect the RFU adaptor as shown. **(N-1)**
Usually keep the RFU adaptor and the TV connected.

Step 2

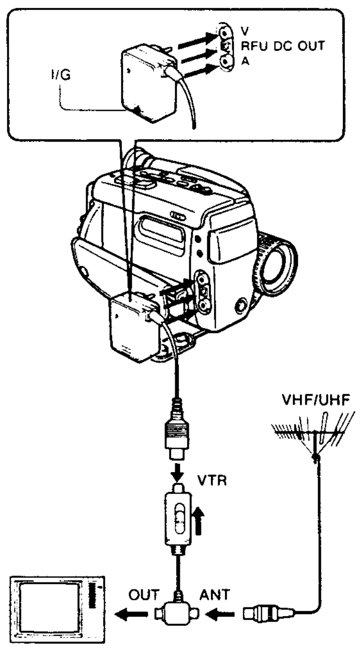
Adjusting the TV

1 Select the RF unit selector of the adaptor to 3 CH or 4 CH, whichever is not active in your area.
2 Turn on the TV and select the 0 position.
3 Tune the TV so that you can get picture and sound from the camcorder.

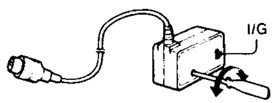
When you watch a TV programme
Turn off the camcorder or disconnect the RFU adaptor from the camcorder.

If your TV is connected with a VTR
Disconnect the aerial connection of the TV and the VTR, and insert the RFU adaptor between the TV and the VTR. **(N-2)**

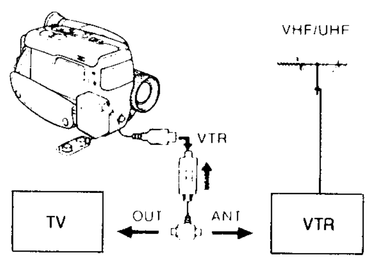
(N-3)



(N-4)



(N-5)



For the customers supplied with the RFU-89EA

Step 1

Connecting an RFU adaptor and a TV

- Use the supplied RFU adaptor.
- Make sure that the TV is turned off.

1 Connect the RFU adaptor as shown. **(N-3)**
2 Set the selector switch of the aerial selector to VTR.

Usually keep the RFU adaptor and the TV connected.

Step 2

Adjusting the TV

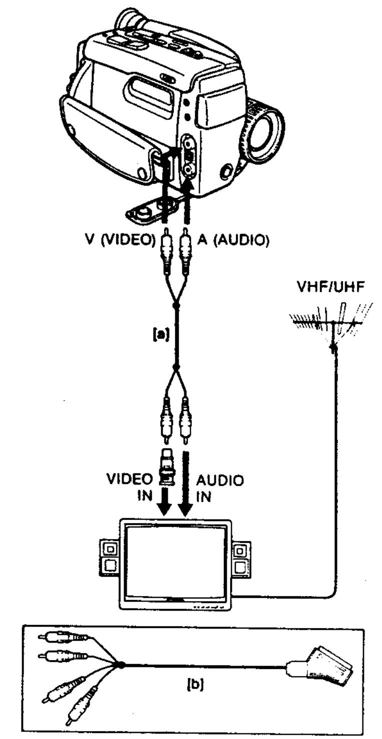
1 Set the I/G selector on the RFU adaptor according to the TV system of your country.
2 Set POWER of the camcorder to CAMERA, insert a tape and turn STANDBY to STANDBY.
3 Turn on the TV and select a programme position that is not used to receive a TV station.
4 Tune the TV so that you can get picture and sound from the camcorder.

When the playback picture is not free of disturbance

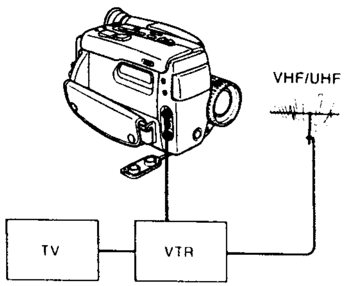
1 Set the selector switch of the aerial selector to ANT.
2 Select a programme position of the TV between UHF channels 30 and 39, so that the TV shows no picture and a steady rustling sound or no sound is heard.
3 Set the selector switch of the aerial selector to VTR.
4 Turn the RF channel setting screw of the RFU adaptor slowly with the supplied screwdriver so that playback picture is clearly displayed on the TV screen. **(N-4)**

If your TV is connected with a VTR
Disconnect the aerial connection of the TV and the VTR, and insert the RFU adaptor between the TV and the VTR. **(N-5)**

(N-6)



(N-7)



Connections for Playback

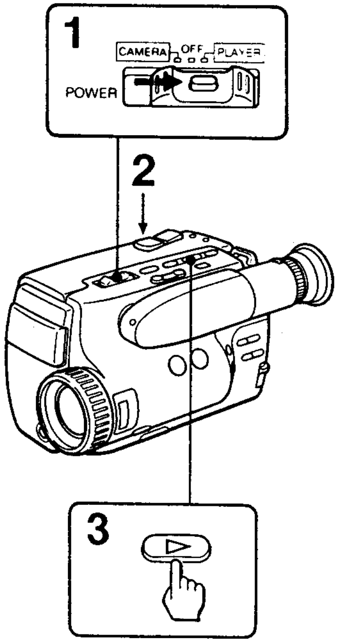
Connecting a TV with Video/Audio Input Jacks

(N-6)
- Make sure that the TV is turned off.

1 Connect the camcorder to the TV.
  Use an appropriate audio/video connecting cable according to the connector type of your TV.
  Sony offers you the following cables.
  [a] VMC-710M/720M: to phono and BNC-type
    If your TV has stereo type audio inputs, use VMC-910MS/920MS.
  [b] VMC-2104: to 21-pin (EUROCONNECTOR)
    If your TV has stereo type audio inputs, use VMC-2106.
2 Set the TV/VTR selector on the TV to VTR.

If your TV is connected with a VTR
Connect V/A (video/audio outputs) on the camcorder to the video/audio input on the VTR. Set the input selector of the VTR to LINE, if available. **(N-7)**

(O)



Playing Back a Tape

Turn on the TV, and select the channel for viewing a playback picture (or set the TV/VTR selector to VTR when a TV has video/audio input jacks). **(O)**

1 **While pressing the green button, set POWER to PLAYER.**

2 **Insert a tape.**

3 **Press ▷.**
  Playback starts.

To view a still picture
Press ❚❚ during playback.
To resume playback, press ▷ or ❚❚ again.

To stop playback
Press □.

To rewind the tape
Press ◀◀.

To advance the tape rapidly
Press ▶▶.

Note
Streaks will appear and sound will be muted in the still picture mode.

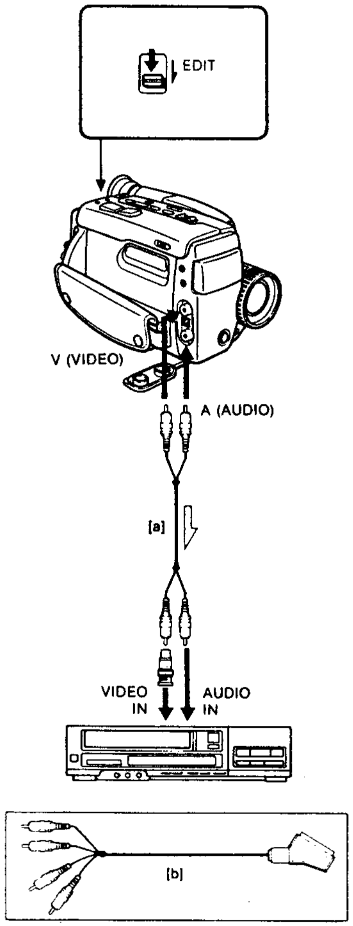
Monitoring a High-Speed Picture

During playback — Picture search
1 In the playback mode, press ◀◀ or ▶▶.
  The picture will be monitored at high speed as long as ◀◀ or ▶▶ is kept pressed.
2 Release ◀◀ or ▶▶ at the desired point.
  Normal playback will resume.

During fast-forward or rewind — Skip scan
1 In the fast-forward or rewind mode, press ◀◀ or ▶▶.
  The picture is monitored as long as ◀◀ or ▶▶ is kept pressed.
2 Release ◀◀ or ▶▶ to resume the normal fast-forward or rewind mode.

Notes
- If you move the position of POWER during playback, the tape will stop. When you move POWER to CAMERA in the playback pause mode, however, the camcorder will enter recording pause mode.
- When the pause mode lasts for 5 minutes or more, the camcorder will automatically enter the stop mode.

(P)



⇨ : Signal flow

Editing onto Another VTR

You can create your own video program by editing with any other 8 8 mm, β Betamax or VHS VHS VTR.

Before You Begin

1 Make connections using an appropriate audio/video connecting cable according to the connector type of your VTR. **(P)**
Sony offers you the following cables.
 [a] VMC-710M/720M: to phono and BNC-type
  If your VTR has stereo type audio inputs, use VMC-910MS/920MS.
 [b] VMC-2104: to 21-pin (EUROCONNECTOR)
  If your VTR has stereo type audio inputs. use VMC-2106.
2 Set the input selector of the VTR to LINE. if available.

Operation

1 Insert a tape to be recorded into the recording VTR.
2 Move EDIT on the camcorder in the direction of the arrow. (EDIT ON)
3 Set POWER of the camcorder to PLAYER and insert your recorded tape.
4 Play back the tape on the camcorder and locate the point where you want to start editing and set the camcorder to the playback pause mode.
5 On the recording VTR. locate the recording start point and set the VTR to the recording pause mode.
6 Press ❚❚ on both units simultaneously to start editing.

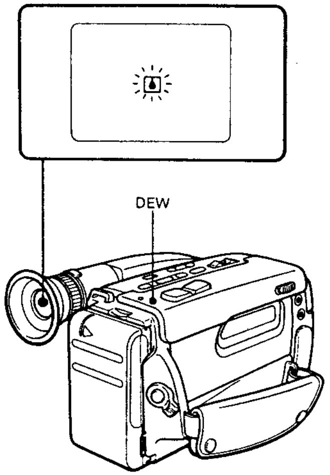
To stop editing momentarily
Press ❚❚ on the recording VTR.

To edit more scenes
Repeat steps **4** to **6**.

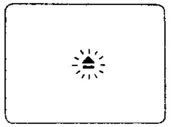
To stop editing
Press □ on both units.

Use of the EDIT switch
When you set EDIT to the direction of the arrow (EDIT ON). picture and sound deteriorations resulting from editing can be kept to the minimum Avoid using the edited tape for multiple generations of editing After editing, move EDIT in the opposite direction of the arrow (EDIT OFF)

(R-1)



(R-2)



Notes and Precautions

Notes on Moisture Condensation

If the camcorder is brought directly from a cold place to a warm place. moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition. the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

If moisture condenses inside the unit (R-1)

Moisture is present inside the camcorder when the ◙ indication in the viewfinder blinks. ⏏ indication also blinks when the cassette is inserted. In this case, no function except for tape ejection will work.
Eject the tape, turn off the camcorder, and leave it with the cassette holder open for at least 1 hour.
The camcorder can be used again if the ◙ indication does not appear when the power is turned on again.

If moisture condenses on the surface of the tape (R-2)

If moisture is present on the surface of the tape when the tape is inserted and a tape transport button (▷ . ▶▶. etc.) is pressed. the ⏏ indication blinks inside the viewfinder. In such case. no function except for tape ejection will work.
Eject the tape and let it sit for at least 1 hour.
The tape can be used again if the ⏏ indication does not appear when the tape is inserted and a tape transport button is pressed.

If moisture condenses on the lens

No indications will appear. but the picture becomes dim.
Turn off the power and leave the camcorder unused for at least 1 hour.

(R-3)

Notes on Video Head Cleaning

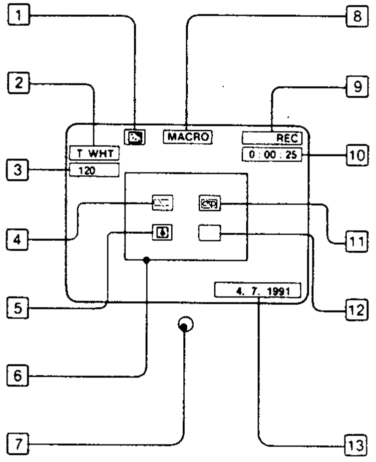
To ensure clear picture, clean the video heads periodically.
When playback pictures are noisy or hardly visible, the video heads may be contaminated.
(R-3)
[a] Slight contamination
[b] Critical contamination
In such cases.

1 Clean the video heads with the Sony V8-25CLH cleaning cassette(not supplied). referring to its instructions.
2 After cleaning, check if the picture is clear by recording or playing back with an ordinaly tape.
3 If the picture is still noisy, repeat cleaning. (Do not repeat cleaning more than 5 times.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the V8-25CLH cleaning cassette is not available in your area, consult your Sony service facility.

(S)



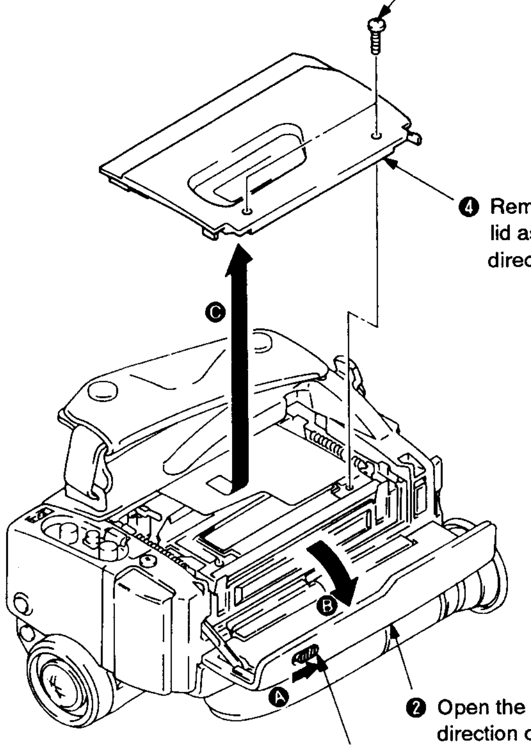
Indications Inside the Viewfinder

(S)

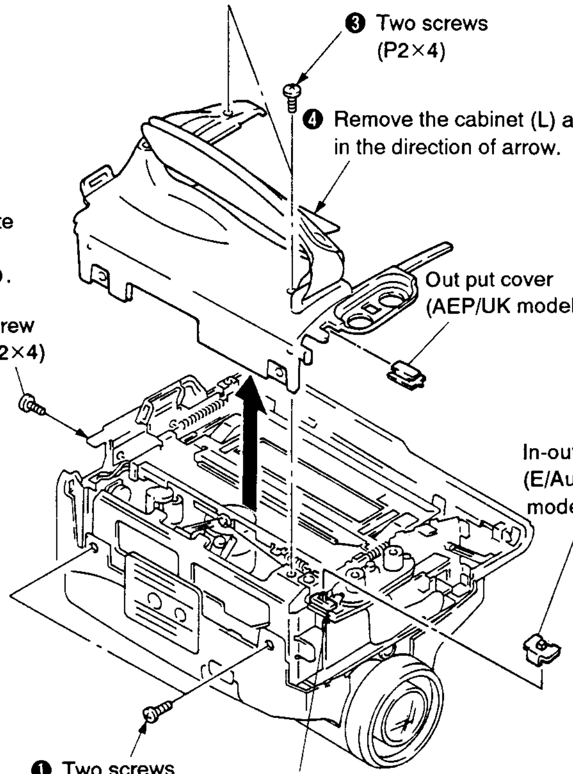
1 BACK LIGHT is pressed.
2 Title colour
3 Shutter speed
4 "Replace battery."
5 Moisture condensation
6 Autofocus adjusting range
Goes out during manual focusing
7 Lights up during recording.
When blinking: "Replace battery."
8 In the MACRO range
9 Tape transport and camera recording mode
10 Tape counter (for camera recording)
11 "Exchange tape."
12 "Clean video heads." or other caution (⊗, ⏏)
13 Date or time

SECTION 2
DISASSEMBLY

2-1. REMOVAL OF CASSETTE LID ASSEMBLY

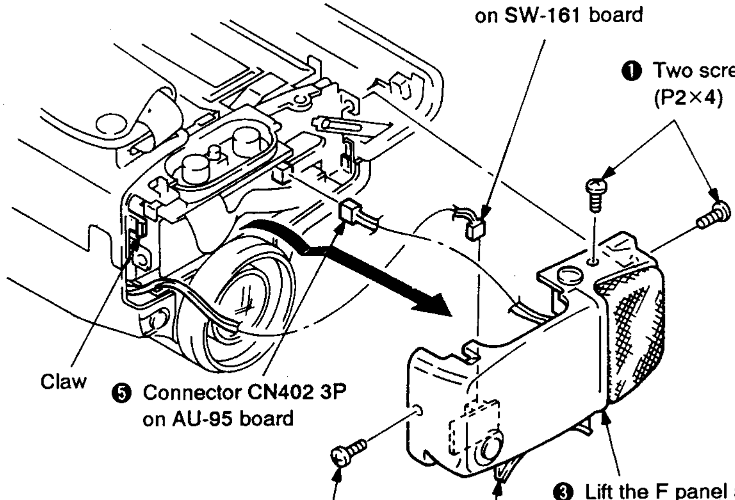

❸ Two screws
(special screw M1.4)
❹ Remove the cassette lid assembly in the direction of arrow Ⓒ.
Ⓒ
Ⓑ
Ⓐ
❷ Open the grip lid in the direction of arrow Ⓑ.
❶ Keep the lock button setting in the direction of arrow Ⓐ.

2-3. REMOVAL OF CABINET (L) ASSEMBLY

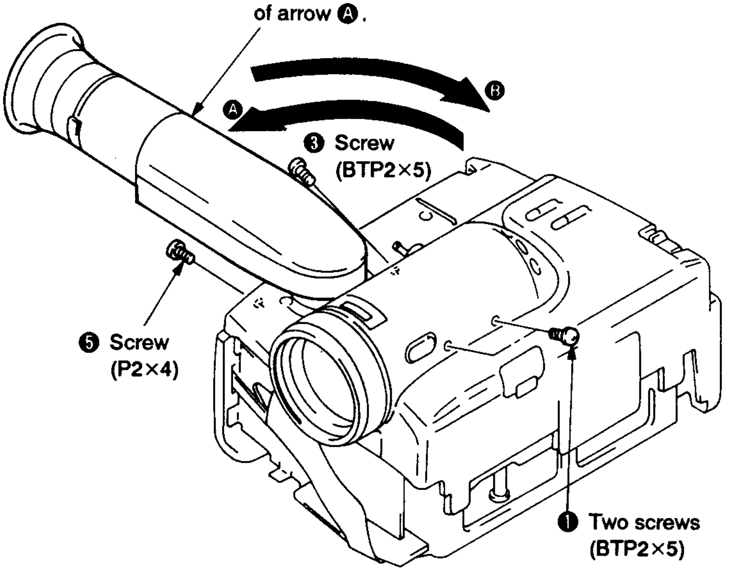

❸ Two screws
(P2×4)
❹ Remove the cabinet (L) assembly in the direction of arrow.
Out put cover
(AEP/UK model only)
❷ Screw
(P2×4)
In-out knob
(E/Australian model only)
❶ Two screws
(P2×4)

Note (AEP/UK model only):
When installing the cabinet (L) assembly, set the switch knob to the left (drum side).

2-2. REMOVAL OF F PANEL ASSEMBLY


❹ Connector CN756 2P
on SW-161 board
❶ Two screws
(P2×4)
Claw
❺ Connector CN402 3P
on AU-95 board
❸ Lift the F panel assembly a little and remove it in the direction of arrow.
(Be careful of the rib.)
❷ Screw
(P2×4)
Rib

2-4. REMOVAL OF VTR AND CAMERA BLOCKS



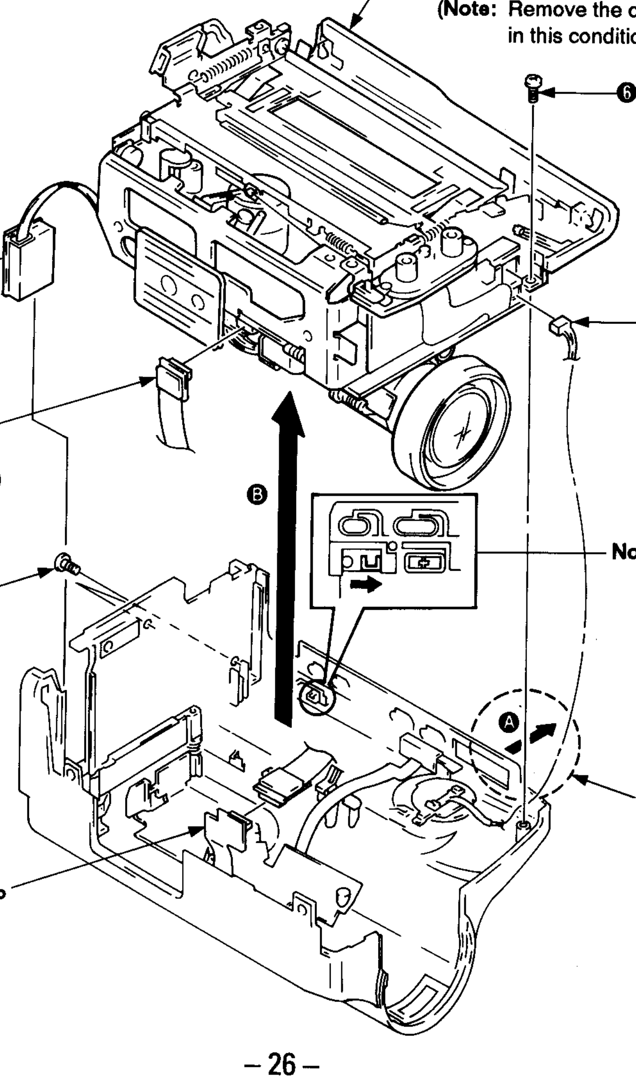
❹ Restore the EVF assembly to the original position by turning it in the direction of arrow Ⓑ.

❷ Turn the EVF assembly in the direction of arrow Ⓐ.

❸ Screw (BTP2×5)

❺ Screw (P2×4)

❶ Two screws (BTP2×5)



❽ Lift up the VTR and camera blocks in the direction of arrow Ⓑ, while turning the A section in the direction of arrow Ⓐ.
(**Note:** Remove the connector in this condition.)

❻ Screw (BTP2×5)

Battery terminal

❾ Connector CN205 4P on VS-72 board

- J-6082-062-A
The control switch block (CF-0) can function by using this jig.

Note: Set the REC switch knob position in the direction of arrow, when installing the VTR and camera blocks.

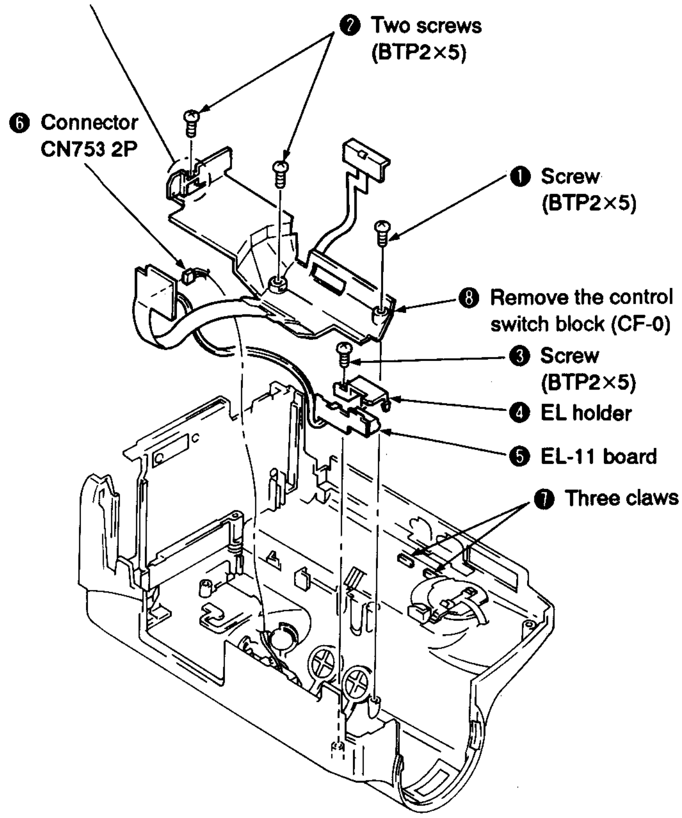
❼ Two screws (P2×4)

A section

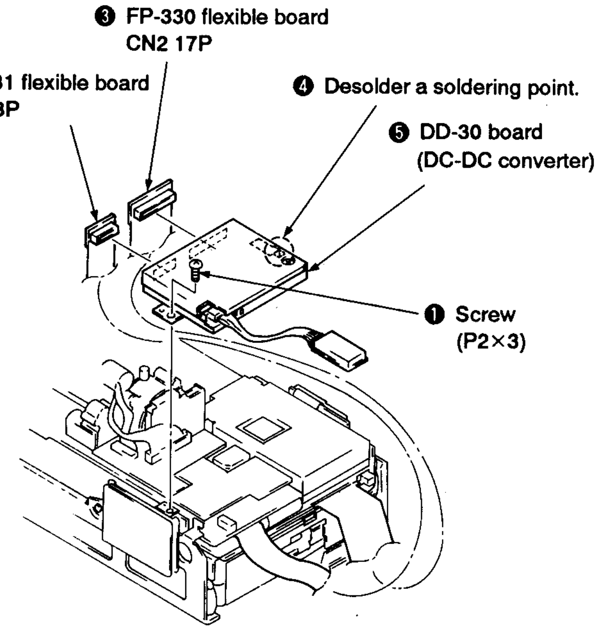
❿ Connector CN804 16P on VC-84 board

2-5. REMOVAL OF CONTROL SWITCH BLOCK (CF-0)

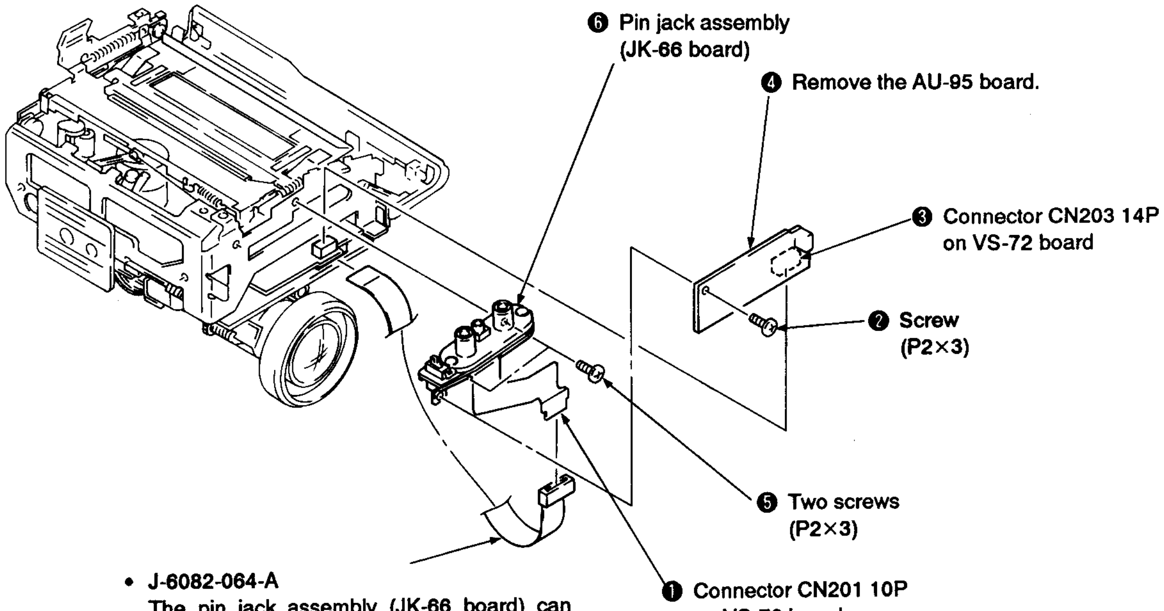
Note: When installing the control switch block, be sure to set the position of the edit switch knob at the cabinet (R) assembly and the slide switch (S762) at the control switch block.


❷ Two screws (BTP2×5)
❻ Connector CN753 2P
❶ Screw (BTP2×5)
❽ Remove the control switch block (CF-0)
❸ Screw (BTP2×5)
❹ EL holder
❺ EL-11 board
❼ Three claws

2-6. REMOVAL OF DD-30 BOARD (DC-DC CONVERTER UNIT)

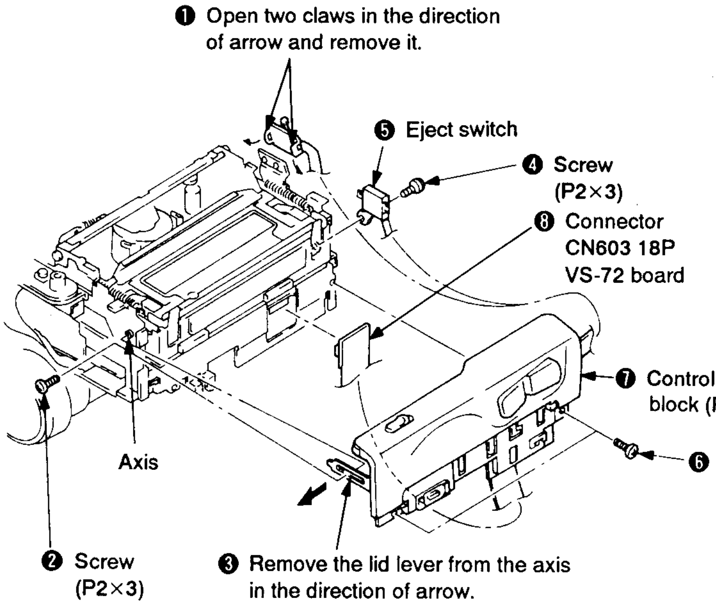

❸ FP-330 flexible board CN2 17P
❷ FP-331 flexible board CN3 8P
❹ Desolder a soldering point.
❺ DD-30 board (DC-DC converter)
❶ Screw (P2×3)

2-7. REMOVAL OF PIN JACK ASSEMBLY (JK-66 BOARD)

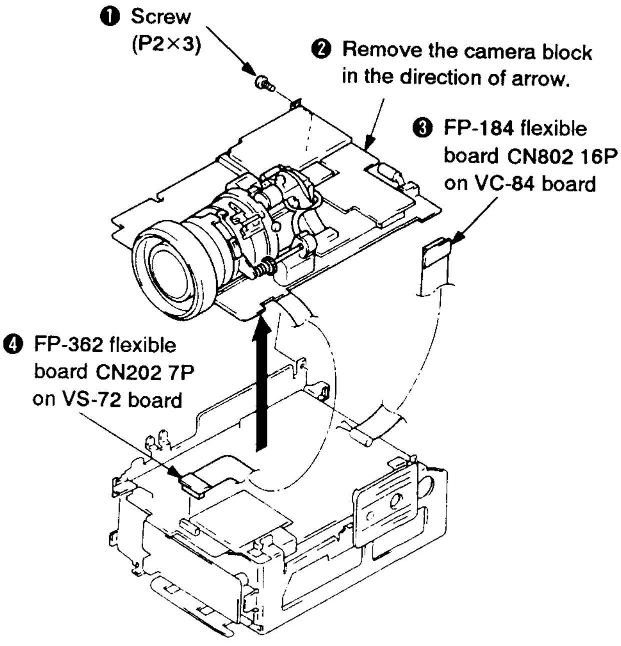

❻ Pin jack assembly (JK-66 board)
❹ Remove the AU-95 board.
❸ Connector CN203 14P on VS-72 board
❷ Screw (P2×3)
❺ Two screws (P2×3)
❶ Connector CN201 10P on VS-72 board

- J-6082-064-A
  The pin jack assembly (JK-66 board) can function by using this jig.

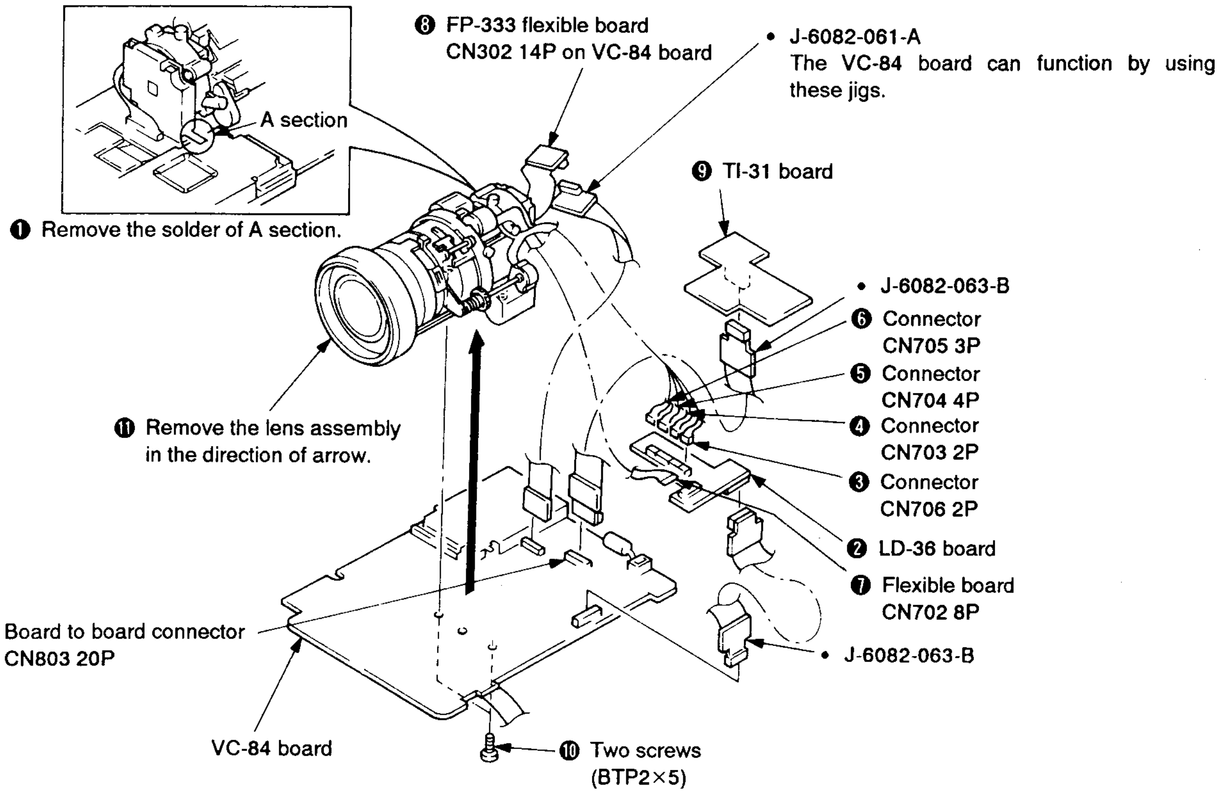
2-8. REMOVAL OF CONTROL SWITCH BLOCK (FK-0)


❶ Open two claws in the direction of arrow and remove it.
❺ Eject switch
❹ Screw (P2×3)
❽ Connector CN603 18P VS-72 board
❼ Control switch block (FK-0)
❻ Two screws (P2×3)
Axis
❷ Screw (P2×3)
❸ Remove the lid lever from the axis in the direction of arrow.

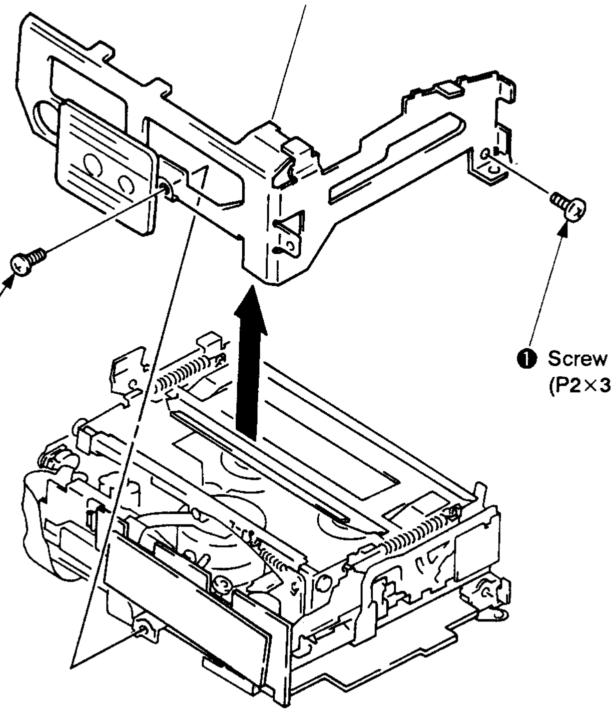
2-9. REMOVAL OF CAMERA BLOCK (VC-84 BOARD)


❶ Screw (P2×3)
❷ Remove the camera block in the direction of arrow.
❸ FP-184 flexible board CN802 16P on VC-84 board
❹ FP-362 flexible board CN202 7P on VS-72 board

2-10. REMOVAL OF LENS ASSEMBLY


A section
❶ Remove the solder of A section.
❽ FP-333 flexible board CN302 14P on VC-84 board
• J-6082-061-A The VC-84 board can function by using these jigs.
❾ TI-31 board
• J-6082-063-B
❻ Connector CN705 3P
❺ Connector CN704 4P
❹ Connector CN703 2P
❸ Connector CN706 2P
❷ LD-36 board
❼ Flexible board CN702 8P
• J-6082-063-B
⓫ Remove the lens assembly in the direction of arrow.
Board to board connector CN803 20P
VC-84 board
❿ Two screws (BTP2×5)

2-11. REMOVAL OF MD FRAME ASSEMBLY

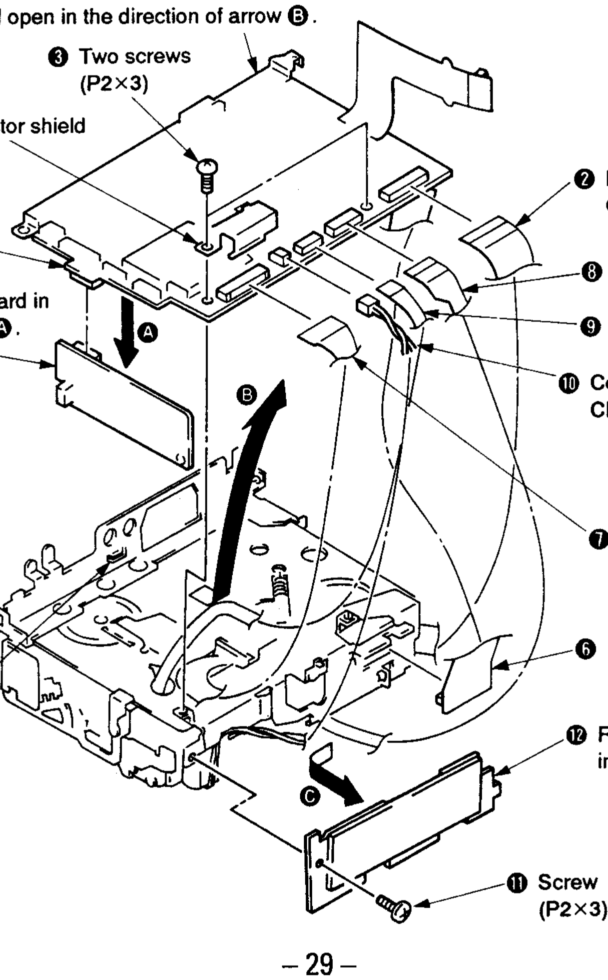


❶ Screw
(P2×3)

❷ Screw
(P2×3)

❸ Remove the MD frame assembly
in the direction of arrow.

2-12. REMOVAL OF VS-72 BOARD



❶ Remove the AU-95 board in
the direction of arrow Ⓐ.

❷ FP-149 flexible board
CN602 14P

❸ Two screws
(P2×3)

❹ RP connector shield

❺ Remove the VS-72 board from the claw
and open in the direction of arrow Ⓑ.

❻ FP-182 flexible board
18P M902 capstan motor

❼ DL-17 flexible board
CN101 15P

❽ DL-18 flexible board
CN501 9P

❾ FP-114 flexible board
CN601 6P

❿ Connector
CN607 2P

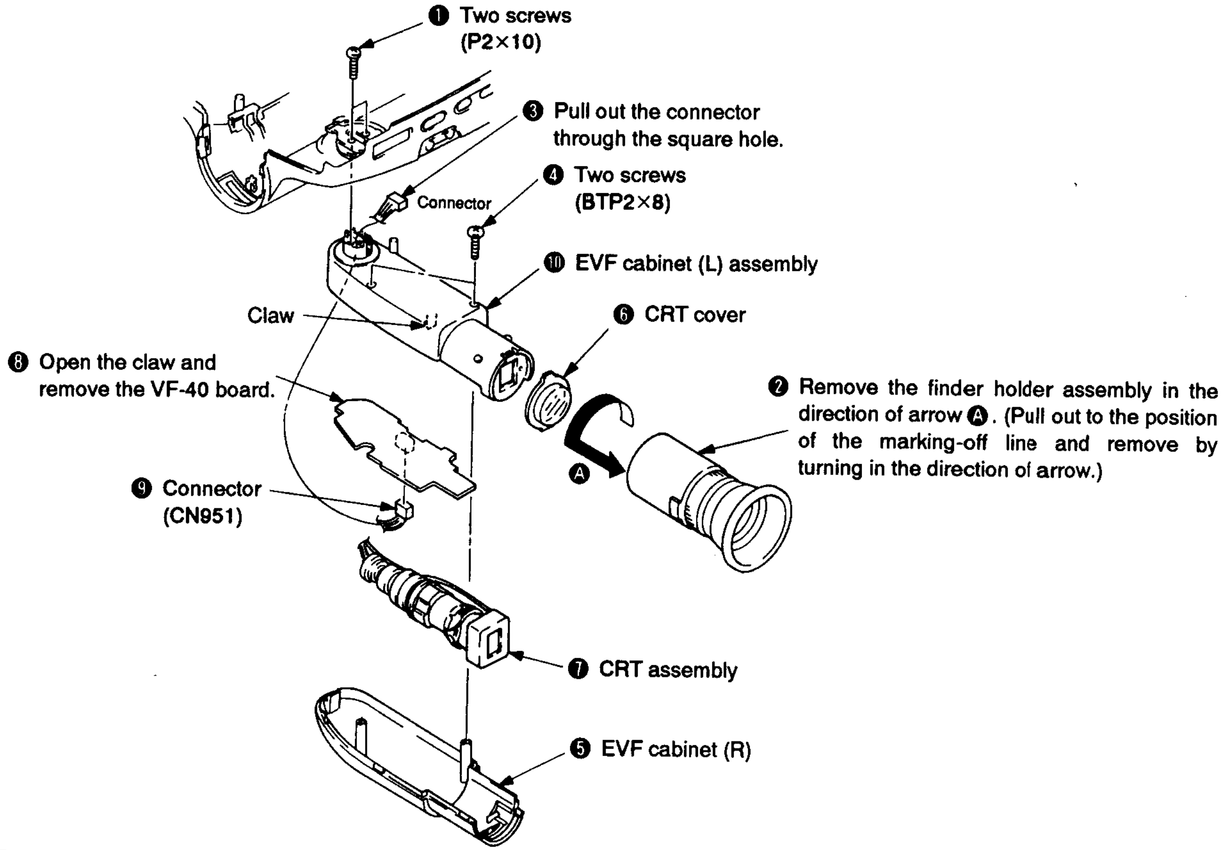
⓫ Screw
(P2×3)

⓬ Remove the PD-18 board
in the direction of arrow Ⓒ.

Connector
CN203 14P

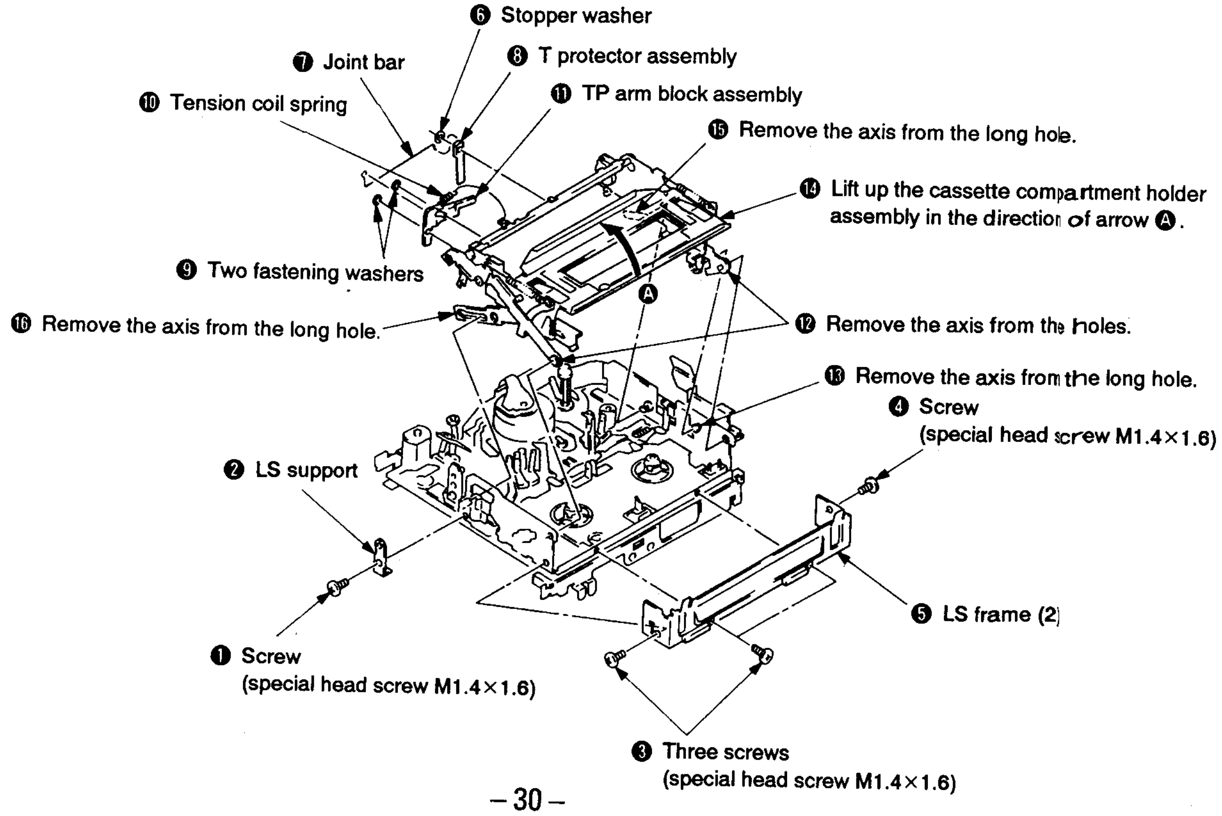
Claw

2-13. REMOVAL OF EVF ASSEMBLY


① Two screws (P2×10)
③ Pull out the connector through the square hole.
Connector
④ Two screws (BTP2×8)
⑩ EVF cabinet (L) assembly
Claw
⑥ CRT cover
⑧ Open the claw and remove the VF-40 board.
② Remove the finder holder assembly in the direction of arrow Ⓐ. (Pull out to the position of the marking-off line and remove by turning in the direction of arrow.)
Ⓐ
⑨ Connector (CN951)
⑦ CRT assembly
⑤ EVF cabinet (R)

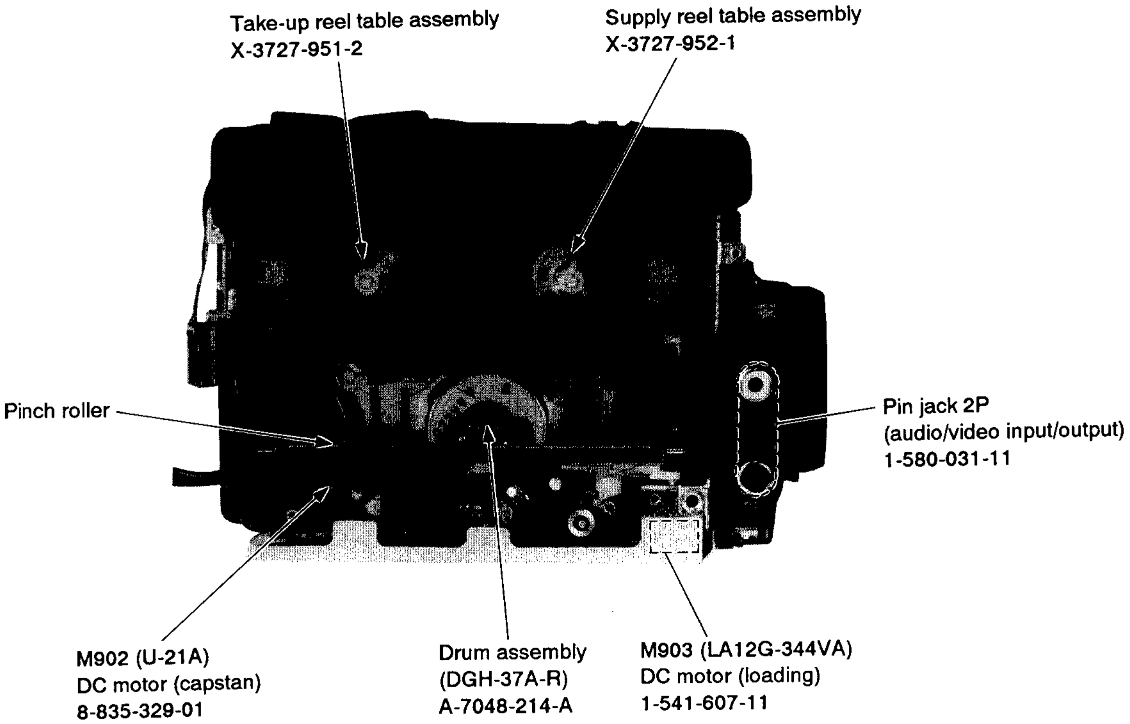
2-14. REMOVAL OF CASSETTE COMPARTMENT HOLDER ASSEMBLY

Note: Set the unit in USE mode.
(To set USE mode, refer to "1-4. Handling of Mode Selector" in "8 mm video mechancal adjustment manual II FL Mechanism (Q mechanism)".)

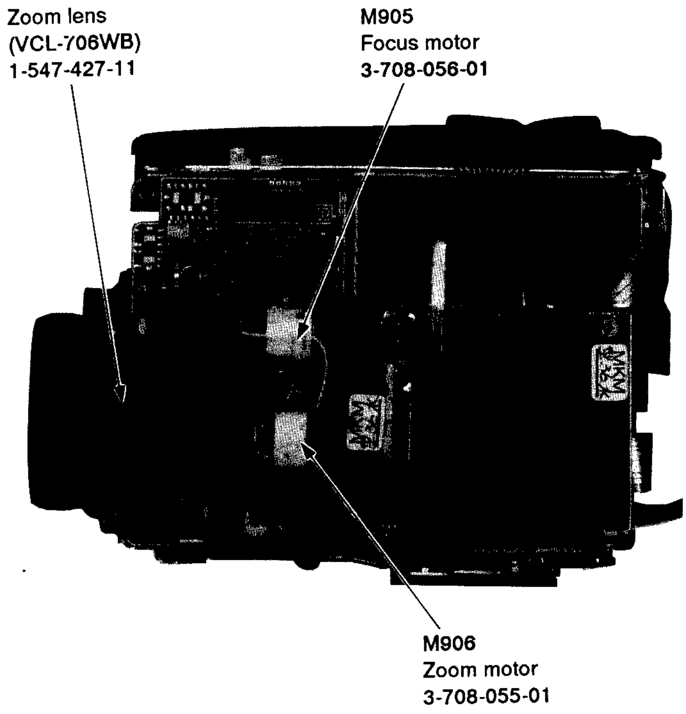

⑥ Stopper washer
⑦ Joint bar
⑧ T protector assembly
⑩ Tension coil spring
⑪ TP arm block assembly
⑮ Remove the axis from the long hole.
⑭ Lift up the cassette compartment holder assembly in the direction of arrow Ⓐ.
⑨ Two fastening washers
Ⓐ
⑯ Remove the axis from the long hole.
⑫ Remove the axis from the holes.
⑬ Remove the axis from the long hole.
④ Screw (special head screw M1.4×1.6)
② LS support
⑤ LS frame (2)
① Screw (special head screw M1.4×1.6)
③ Three screws (special head screw M1.4×1.6)

2-15. INTERNAL VIEWS

— Right side —


Take-up reel table assembly
X-3727-951-2
Supply reel table assembly
X-3727-952-1
Pinch roller
Pin jack 2P
(audio/video input/output)
1-580-031-11
M902 (U-21A)
DC motor (capstan)
8-835-329-01
Drum assembly
(DGH-37A-R)
A-7048-214-A
M903 (LA12G-344VA)
DC motor (loading)
1-541-607-11

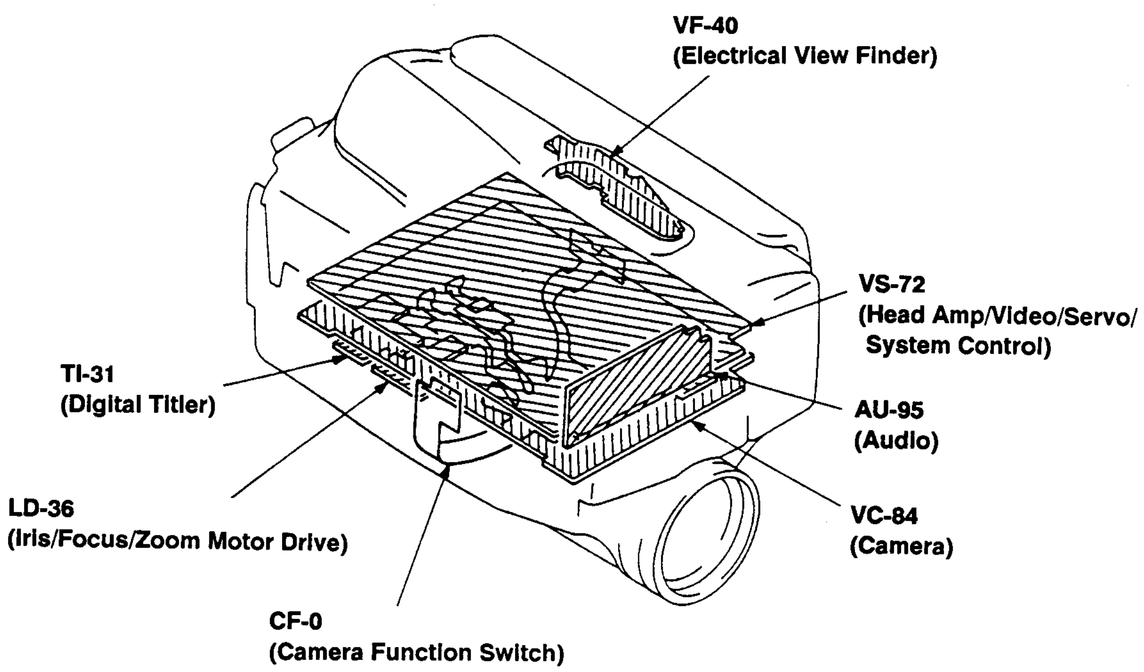
— Left side —

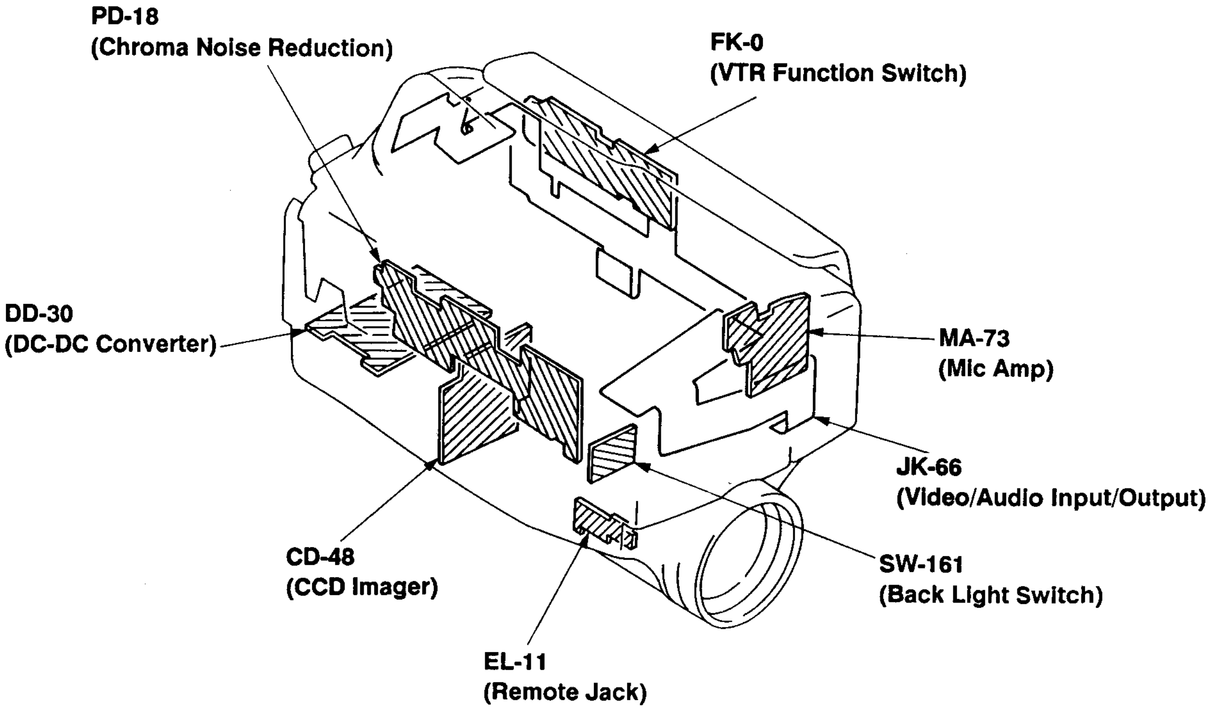

Zoom lens
(VCL-706WB)
1-547-427-11
M905
Focus motor
3-708-056-01
M906
Zoom motor
3-708-055-01

SECTION 3

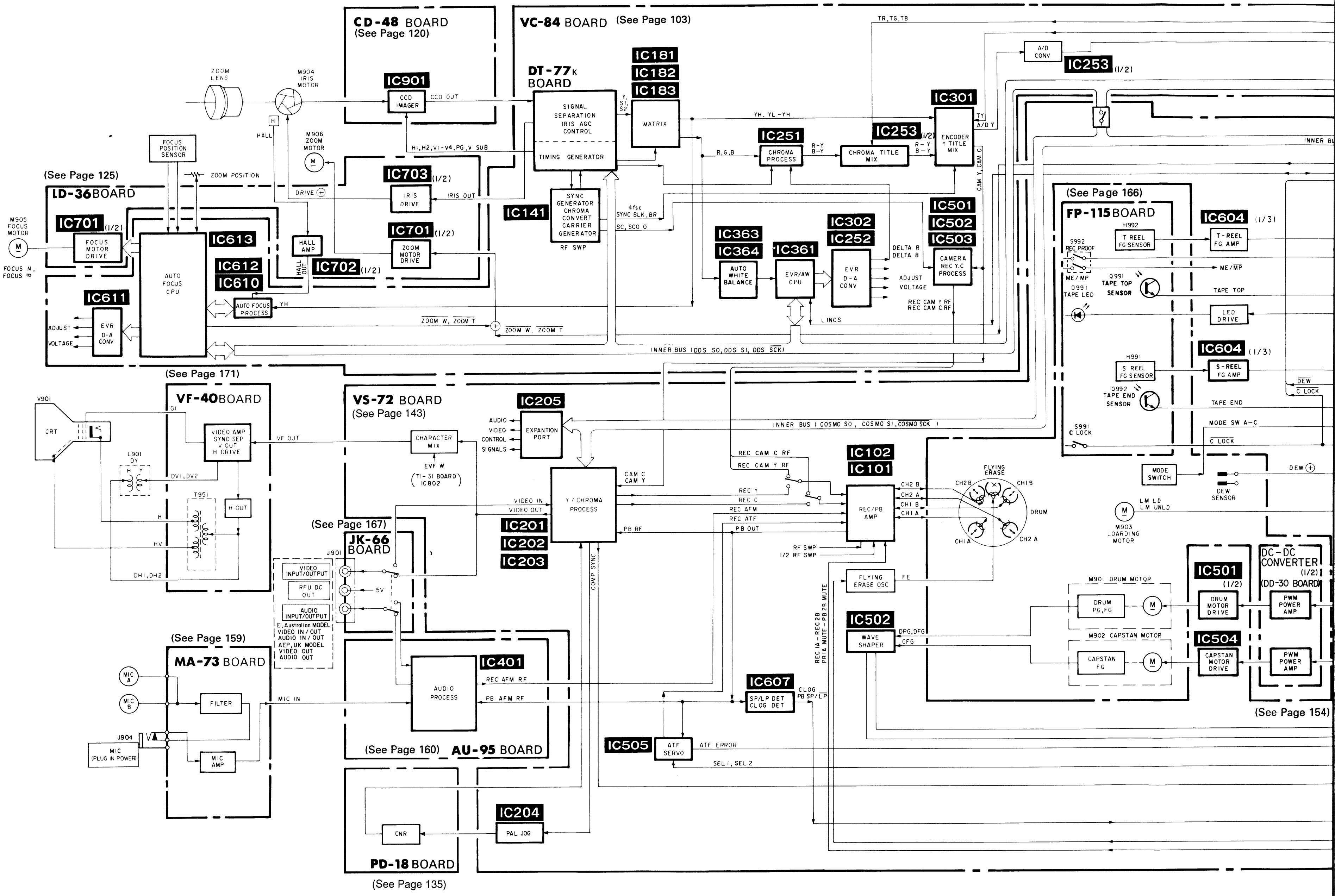
DIAGRAMS

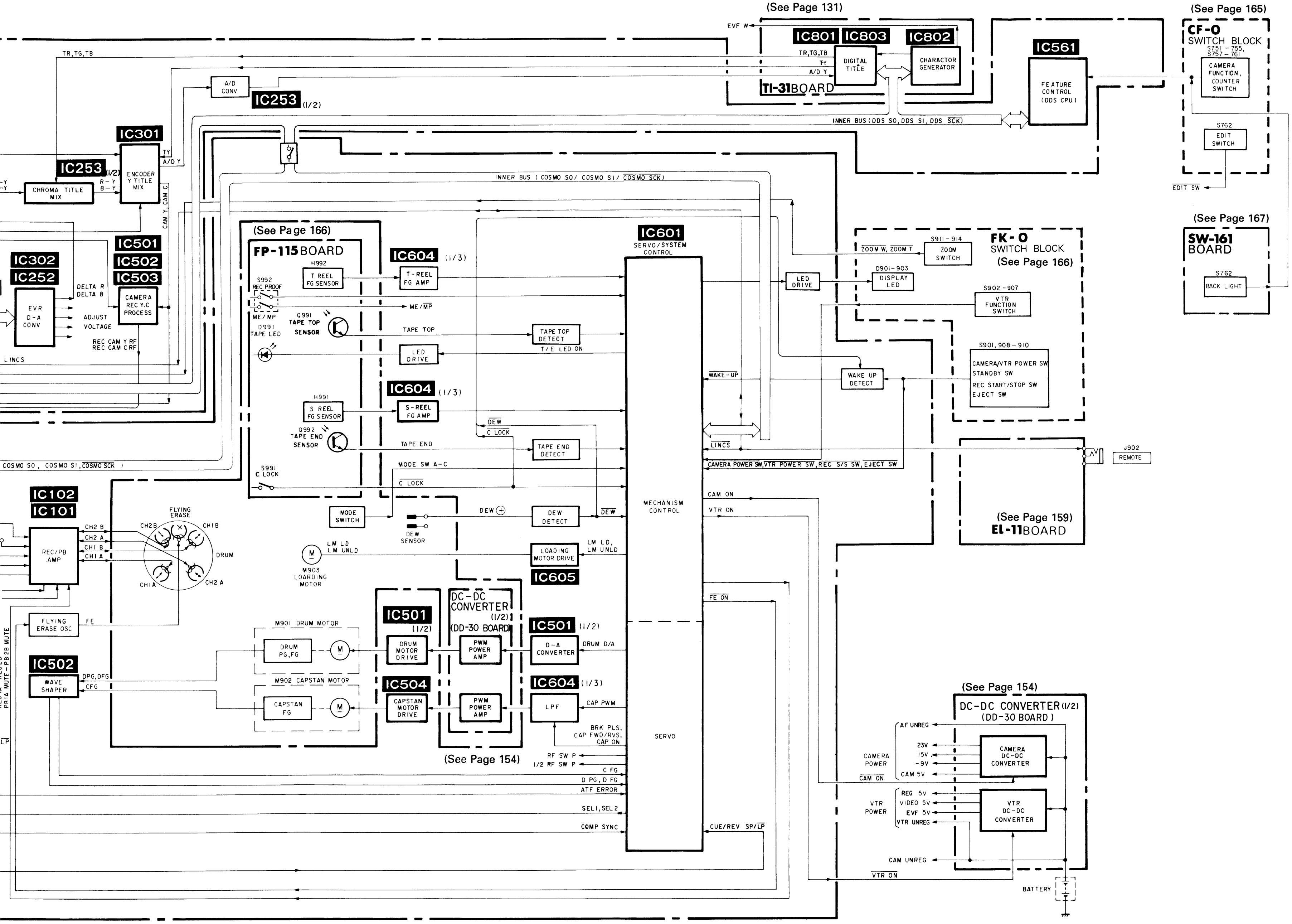
3-1. CIRCUIT BOARDS LOCATION

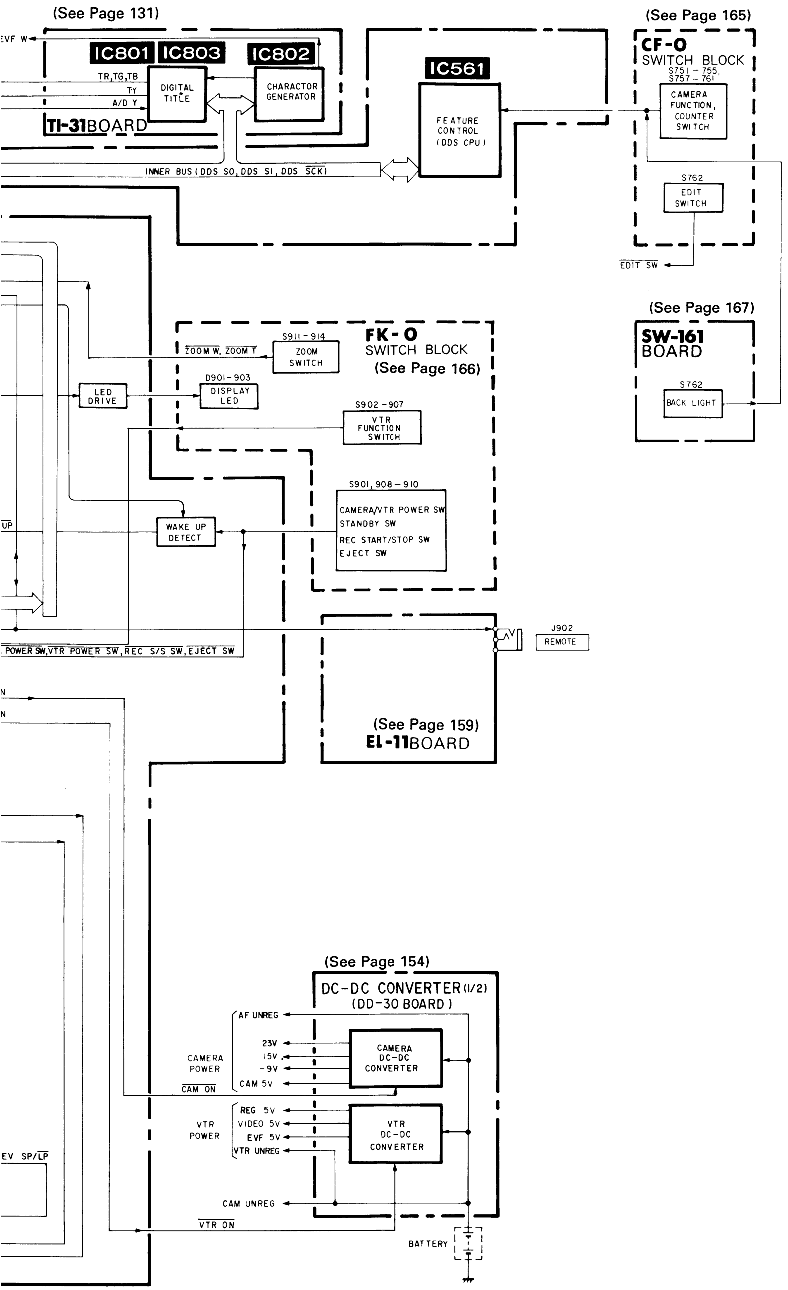

VF-40
(Electrical View Finder)
VS-72
(Head Amp/Video/Servo/System Control)
TI-31
(Digital Titler)
AU-95
(Audio)
LD-36
(Iris/Focus/Zoom Motor Drive)
VC-84
(Camera)
CF-0
(Camera Function Switch)


PD-18
(Chroma Noise Reduction)
FK-0
(VTR Function Switch)
DD-30
(DC-DC Converter)
MA-73
(Mic Amp)
JK-66
(Video/Audio Input/Output)
CD-48
(CCD Imager)
SW-161
(Back Light Switch)
EL-11
(Remote Jack)

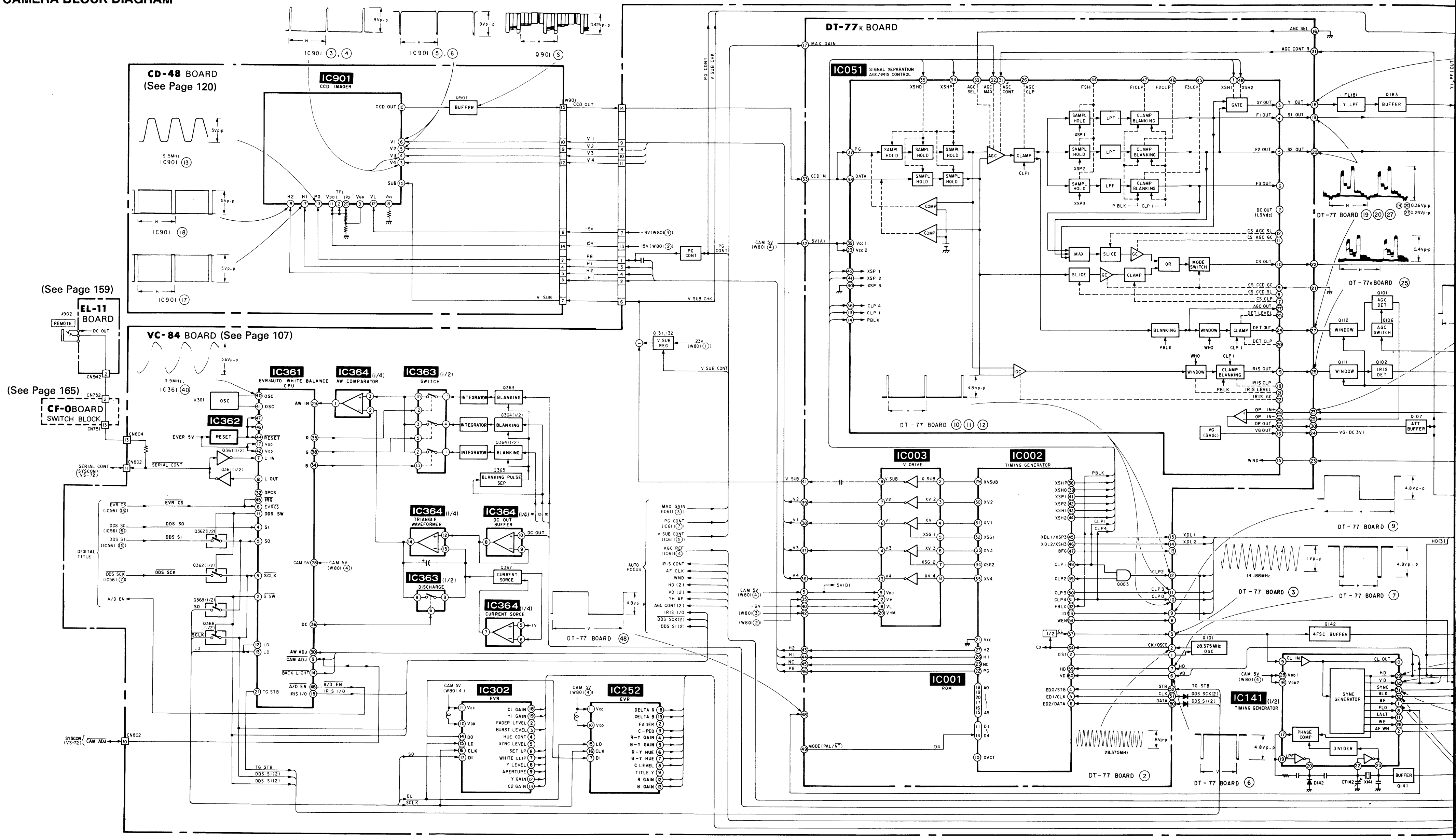
3-2. OVERALL BLOCK DIAGRAM

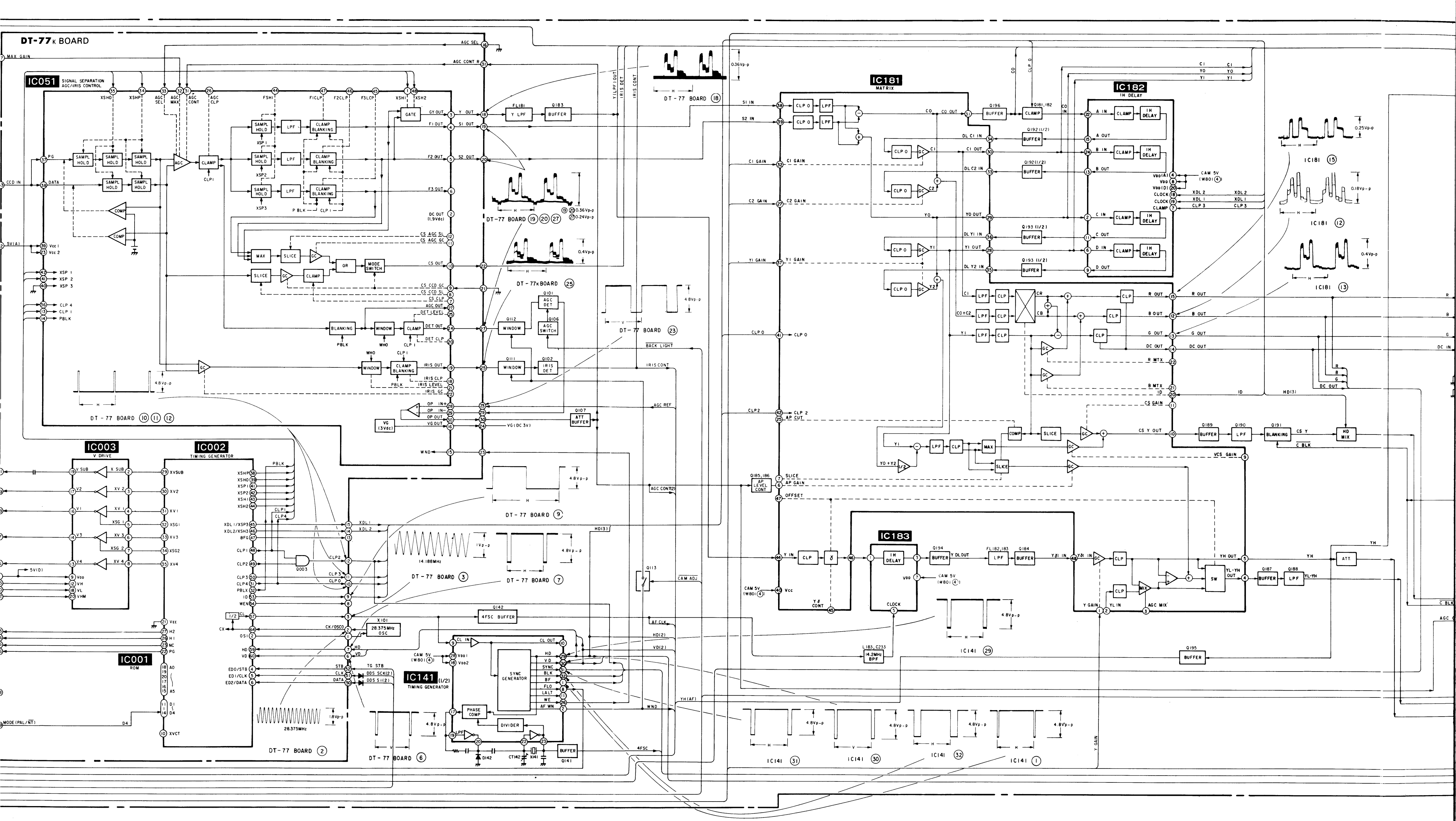

CD-48 BOARD
(See Page 120)
IC901
CCD IMAGER
CCD OUT
VC-84 BOARD (See Page 103)
DT-77K BOARD
SIGNAL SEPARATION IRIS AGC CONTROL
TIMING GENERATOR
IC181
IC182
IC183
MATRIX
Y, S1, S2
YH, YL-YH
R,G,B
IC251
CHROMA PROCESS
R-Y
B-Y
CHROMA TITLE MIX
IC253 (1/2)
IC301
ENCODER Y TITLE MIX
TY
A/D Y
CAM Y, CAM C
A/D CONV
TR,TG,TB
INNER BUS
IC141
SYNC GENERATOR CHROMA CONVERT CARRIER GENERATOR
RF SWP
4fsc
SYNC BLK,BR
SC, SCO O
IC363
IC364
AUTO WHITE BALANCE
IC361
EVR/AW CPU
IC302
IC252
EVR D-A CONV
DELTA R
DELTA B
ADJUST
VOLTAGE
IC501
IC502
IC503
CAMERA REC Y.C PROCESS
REC CAM Y RF
REC CAM C RF
LINCS
INNER BUS (DDS SO,DDS SI, DDS SCK)
ZOOM LENS
M904 IRIS MOTOR
HALL
H
M906 ZOOM MOTOR
FOCUS POSITION SENSOR
ZOOM POSITION
DRIVE
H1,H2,V1-V4,PG,V SUB
IC703 (1/2)
IRIS DRIVE
IRIS OUT
IC701 (1/2)
ZOOM MOTOR DRIVE
HALL AMP
HALL OUT
IC702 (1/2)
(See Page 125)
LD-36 BOARD
M905 FOCUS MOTOR
FOCUS N, FOCUS B
IC701 (1/2)
FOCUS MOTOR DRIVE
IC613
IC612
IC610
AUTO FOCUS CPU
AUTO FOCUS PROCESS
YH
IC611
EVR D-A CONV
ADJUST
VOLTAGE
ZOOM W, ZOOM T
(See Page 171)
VF-40 BOARD
V901
CRT
G1
L901 DY
VIDEO AMP SYNC SEP V OUT H DRIVE
VF OUT
DV1,DV2
T951
H OUT
H
HV
DH1,DH2
VS-72 BOARD
(See Page 143)
CHARACTER MIX
EVF W
(TI-31 BOARD IC802)
IC205
EXPANTION PORT
AUDIO
VIDEO
CONTROL
SIGNALS
INNER BUS (COSMO SO, COSMO SI, COSMO SCK)
Y/CHROMA PROCESS
CAM C
CAM Y
VIDEO IN
VIDEO OUT
IC201
IC202
IC203
PB RF
COMP SYNC
REC CAM C RF
REC CAM Y RF
REC Y
REC C
REC AFM
REC ATF
PB OUT
IC102
IC101
REC/PB AMP
CH2 B
CH2 A
CH1 B
CH1 A
RF SWP
1/2 RF SWP
FLYING ERASE
DRUM
FLYING ERASE OSC
FE
(See Page 167)
JK-66 BOARD
J901
VIDEO INPUT/OUTPUT
RFU DC OUT
AUDIO INPUT/OUTPUT
5V
E, Australian MODEL
VIDEO IN/OUT
AUDIO IN/OUT
AEP, UK MODEL
VIDEO OUT
AUDIO OUT
(See Page 159)
MA-73 BOARD
MIC A
MIC B
FILTER
MIC IN
J904
MIC (PLUG IN POWER)
MIC AMP
IC401
AUDIO PROCESS
REC AFM RF
PB AFM RF
(See Page 160) AU-95 BOARD
IC204
PAL JOG
CNR
PD-18 BOARD
(See Page 135)
REC 1A-REC 2B
PR1A MUTE-PB 2B MUTE
IC502
WAVE SHAPER
DPG,DFG
CFG
IC607
SP/LP DET CLOG DET
CLOG
PB SP/LP
IC505
ATF SERVO
ATF ERROR
SEL 1, SEL 2
(See Page 166)
FP-115 BOARD
H992
T REEL FG SENSOR
S992 REC PROOF
ME/MP
Q991 TAPE TOP SENSOR
D991 TAPE LED
IC604 (1/3)
T-REEL FG AMP
TAPE TOP
LED DRIVE
H991
S REEL FG SENSOR
Q992 TAPE END SENSOR
IC604 (1/3)
S-REEL FG AMP
DEW
C LOCK
TAPE END
MODE SW A-C
S991 C LOCK
MODE SWITCH
DEW SENSOR
M903 LOARDING MOTOR
LM LD
LM UNLD
M901 DRUM MOTOR
DRUM PG,FG
M902 CAPSTAN MOTOR
CAPSTAN FG
IC501 (1/2)
DRUM MOTOR DRIVE
IC504
CAPSTAN MOTOR DRIVE
DC-DC CONVERTER (1/2)
(DD-30 BOARD)
PWM POWER AMP
PWM POWER AMP
(See Page 154)
M

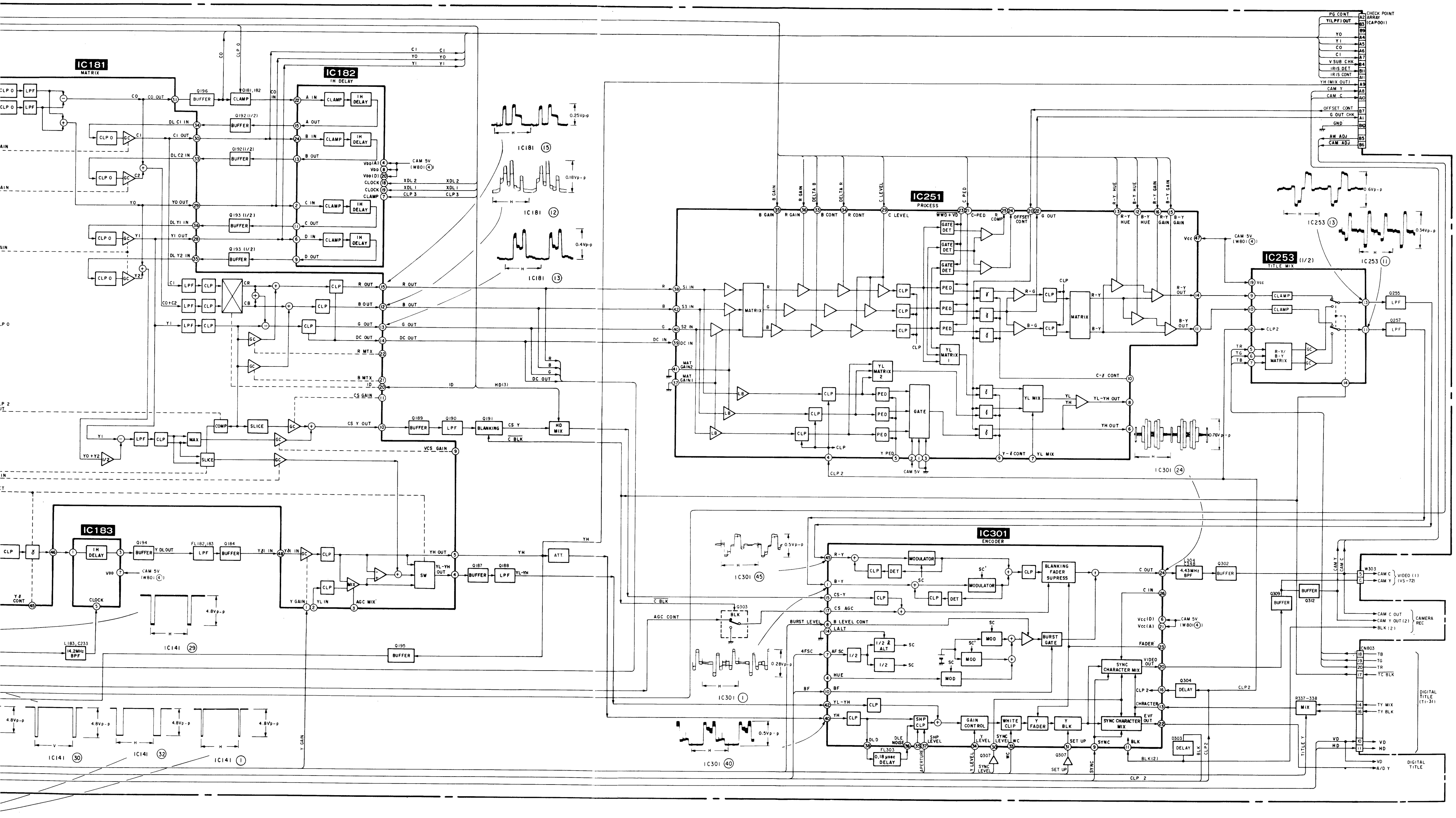

(See Page 131)
EVF W
IC801
IC803
IC802
TR,TG,TB
T-Y
A/D Y
DIGITAL TITLE
CHARACTOR GENERATOR
TI-31 BOARD
IC561
FEATURE CONTROL (DDS CPU)
INNER BUS (DDS SO, DDS SI, DDS SCK)
(See Page 165)
CF-O SWITCH BLOCK
S751 – 755, S757 – 761
CAMERA FUNCTION, COUNTER SWITCH
S762
EDIT SWITCH
EDIT SW
(See Page 167)
SW-161 BOARD
S762
BACK LIGHT
TR,TG,TB
A/D CONV
IC253 (1/2)
IC301
T-Y
A/D Y
IC253 (1/2)
R-Y
B-Y
CHROMA TITLE MIX
ENCODER Y TITLE MIX
CAM Y, CAM C
INNER BUS (COSMO SO/ COSMO SI/ COSMO SCK)
IC501
IC502
IC503
IC302
IC252
EVR D-A CONV
DELTA R
DELTA B
ADJUST VOLTAGE
CAMERA REC Y.C PROCESS
REC CAM Y RF
REC CAM C RF
LINCS
COSMO SO, COSMO SI, COSMO SCK
(See Page 166)
FP-115 BOARD
H992
T REEL FG SENSOR
IC604 (1/3)
T-REEL FG AMP
S992 REC PROOF
ME/MP
ME/MP
Q991 TAPE TOP SENSOR
D991 TAPE LED
TAPE TOP
TAPE TOP DETECT
T/E LED ON
LED DRIVE
IC604 (1/3)
H991
S REEL FG SENSOR
S-REEL FG AMP
Q992 TAPE END SENSOR
TAPE END
TAPE END DETECT
DEW
C LOCK
S991 C LOCK
MODE SW A–C
C LOCK
IC601
SERVO/SYSTEM CONTROL
MECHANISM CONTROL
SERVO
MODE SWITCH
DEW (+)
DEW SENSOR
DEW DETECT
DEW
M903 LOADING MOTOR
LM LD, LM UNLD
LOADING MOTOR DRIVE
LM LD, LM UNLD
IC605
IC102
IC101
FLYING ERASE
CH2 B
CH2 A
CH1 B
CH1 A
REC/PB AMP
DRUM
FLYING ERASE OSC
FE
IC502
WAVE SHAPER
DPG,DFG
CFG
PR1A MUTE · PB 2B MUTE
LP
M901 DRUM MOTOR
DRUM PG,FG
M
M902 CAPSTAN MOTOR
CAPSTAN FG
IC501 (1/2)
DRUM MOTOR DRIVE
IC504
CAPSTAN MOTOR DRIVE
DC-DC CONVERTER (1/2) (DD-30 BOARD)
PWM POWER AMP
PWM POWER AMP
(See Page 154)
IC501 (1/2)
D-A CONVERTER
DRUM D/A
IC604 (1/3)
LPF
CAP PWM
BRK PLS, CAP FWD/RVS, CAP ON
RF SW P
1/2 RF SW P
C FG
D PG, D FG
ATF ERROR
SEL1, SEL2
COMP SYNC
WAKE-UP
LINCS
CAMERA POWER SW, VTR POWER SW, REC S/S SW, EJECT SW
CAM ON
VTR ON
FE ON
CUE/REV SP/LP
LED DRIVE
S911 – 914
ZOOM W, ZOOM T
ZOOM SWITCH
FK-O SWITCH BLOCK
(See Page 166)
D901 – 903
DISPLAY LED
S902 – 907
VTR FUNCTION SWITCH
S901, 908 – 910
CAMERA/VTR POWER SW
STANDBY SW
REC START/STOP SW
EJECT SW
WAKE UP DETECT
J902
REMOTE
(See Page 159)
EL-11 BOARD
(See Page 154)
DC-DC CONVERTER (1/2) (DD-30 BOARD)
AF UNREG
23V
15V
-9V
CAM 5V
CAMERA POWER
CAM ON
CAMERA DC-DC CONVERTER
REG 5V
VIDEO 5V
EVF 5V
VTR UNREG
VTR POWER
VTR DC-DC CONVERTER
CAM UNREG
VTR ON
BATTERY


(See Page 131)
EVF W
IC801
IC803
IC802
TR,TG,TB
TY
A/D Y
DIGITAL TITLE
CHARACTOR GENERATOR
TI-31 BOARD
IC561
FEATURE CONTROL (DDS CPU)
INNER BUS (DDS SO, DDS SI, DDS SCK)
(See Page 165)
CF-0
SWITCH BLOCK
S751 - 755, S757 - 761
CAMERA FUNCTION, COUNTER SWITCH
S762
EDIT SWITCH
EDIT SW
(See Page 167)
SW-161
BOARD
S762
BACK LIGHT
FK-0
SWITCH BLOCK
(See Page 166)
S911 - 914
ZOOM W, ZOOM T
ZOOM SWITCH
D901 - 903
DISPLAY LED
LED DRIVE
S902 - 907
VTR FUNCTION SWITCH
S901, 908 - 910
CAMERA/VTR POWER SW
STANDBY SW
REC START/STOP SW
EJECT SW
UP
WAKE UP DETECT
POWER SW, VTR POWER SW, REC S/S SW, EJECT SW
J902
REMOTE
(See Page 159)
EL-11 BOARD
N
N
EV SP/LP
(See Page 154)
DC-DC CONVERTER (1/2)
(DD-30 BOARD)
AF UNREG
CAMERA POWER
23V
15V
-9V
CAM 5V
CAMERA DC-DC CONVERTER
CAM ON
VTR POWER
REG 5V
VIDEO 5V
EVF 5V
VTR UNREG
VTR DC-DC CONVERTER
CAM UNREG
VTR ON
BATTERY

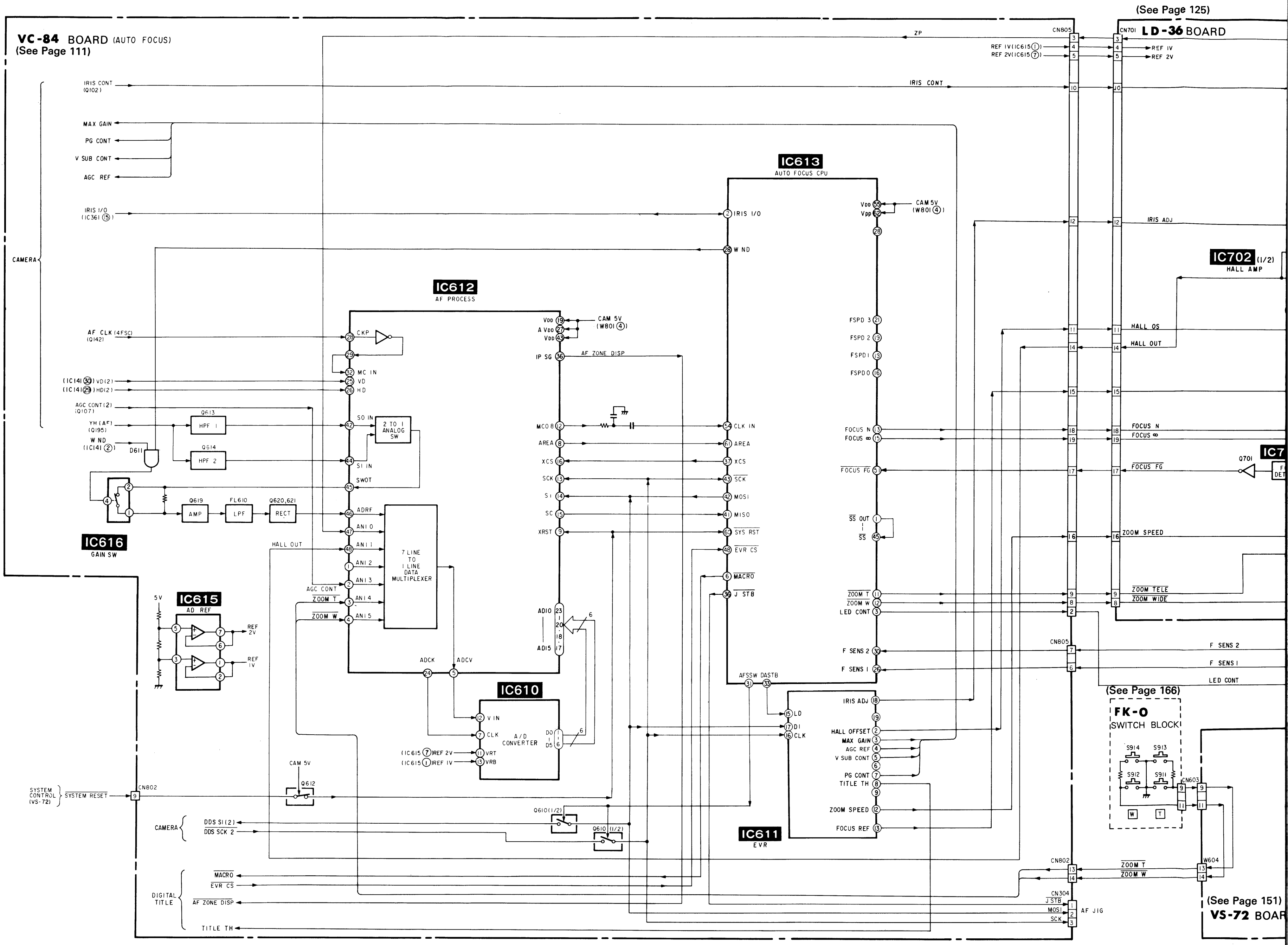
3-3. CAMERA BLOCK DIAGRAM


CD-48 BOARD
(See Page 120)
IC901
CCD IMAGER
Q901
BUFFER
CCD OUT
IC901 ③, ④
IC901 ⑤, ⑥
Q901 ⑤
9.5MHz
IC901 ⑬
IC901 ⑱
IC901 ⑰
(See Page 159)
EL-11 BOARD
J902
REMOTE
DC OUT
CN942
(See Page 165)
CF-0BOARD
SWITCH BLOCK
CN752
CN751
VC-84 BOARD (See Page 107)
3.9MHz
IC361 ㊵
IC361
EVR/AUTO WHITE BALANCE CPU
IC362
RESET
EVER 5V
IC364 (1/4)
AW COMPARATOR
IC363 (1/2)
SWITCH
INTEGRATOR
BLANKING
Q363
Q364(1/2)
Q365
BLANKING PULSE SEP
IC364 (1/4)
TRIANGLE WAVEFORMER
IC364 (1/4)
DC OUT BUFFER
IC363 (1/2)
DISCHARGE
Q367
CURRENT SORCE
IC364 (1/4)
CURRENT SORCE
SERIAL CONT (SYSCON) (VS-72)
DIGITAL TITLE
EVR CS
DDS S0
DDS S1
DDS SCK
A/D EN
CN804
CN802
SYSCON (VS-72) CAM ADJ
IC302
EVR
IC252
EVR
DT-77 BOARD ㊽
AUTO FOCUS
MAX GAIN
PG CONT
V SUB CONT
AGC REF
IRIS CONT
AF CLK
WND
HD
VD
YH AF
AGC CONT
IRIS I/O
Q131, 132
V SUB REG
23V (W801 ①)
PG CONT
DT-77K BOARD
IC051
SIGNAL SEPARATION AGC/IRIS CONTROL
SAMPL HOLD
AGC
CLAMP
LPF
CLAMP BLANKING
GATE
COMP
MAX
SLICE
GC
OR
MODE SWITCH
BLANKING
WINDOW
CLAMP BLANKING
DT-77 BOARD ⑩ ⑪ ⑫
DT-77 BOARD ⑲ ⑳ ㉗
DT-77K BOARD ㉕
FL181
Y LPF
Q183
BUFFER
Q101
AGC DET
Q106
AGC SWITCH
Q112
WINDOW
Q111
WINDOW
Q102
IRIS DET
Q107
ATT BUFFER
IC003
V DRIVE
IC002
TIMING GENERATOR
IC001
ROM
Q003
X101
28.375MHz OSC
Q142
4FSC BUFFER
IC141 (1/2)
TIMING GENERATOR
SYNC GENERATOR
PHASE COMP
DIVIDER
BUFFER
Q141
14.188MHz
28.375MHz
DT-77 BOARD ②
DT-77 BOARD ③
DT-77 BOARD ⑥
DT-77 BOARD ⑦
DT-77 BOARD ⑨
MODE (PAL/NT)
CAM 5V (W801 ④)
-9V (W801 ③)
15V (W801 ②)

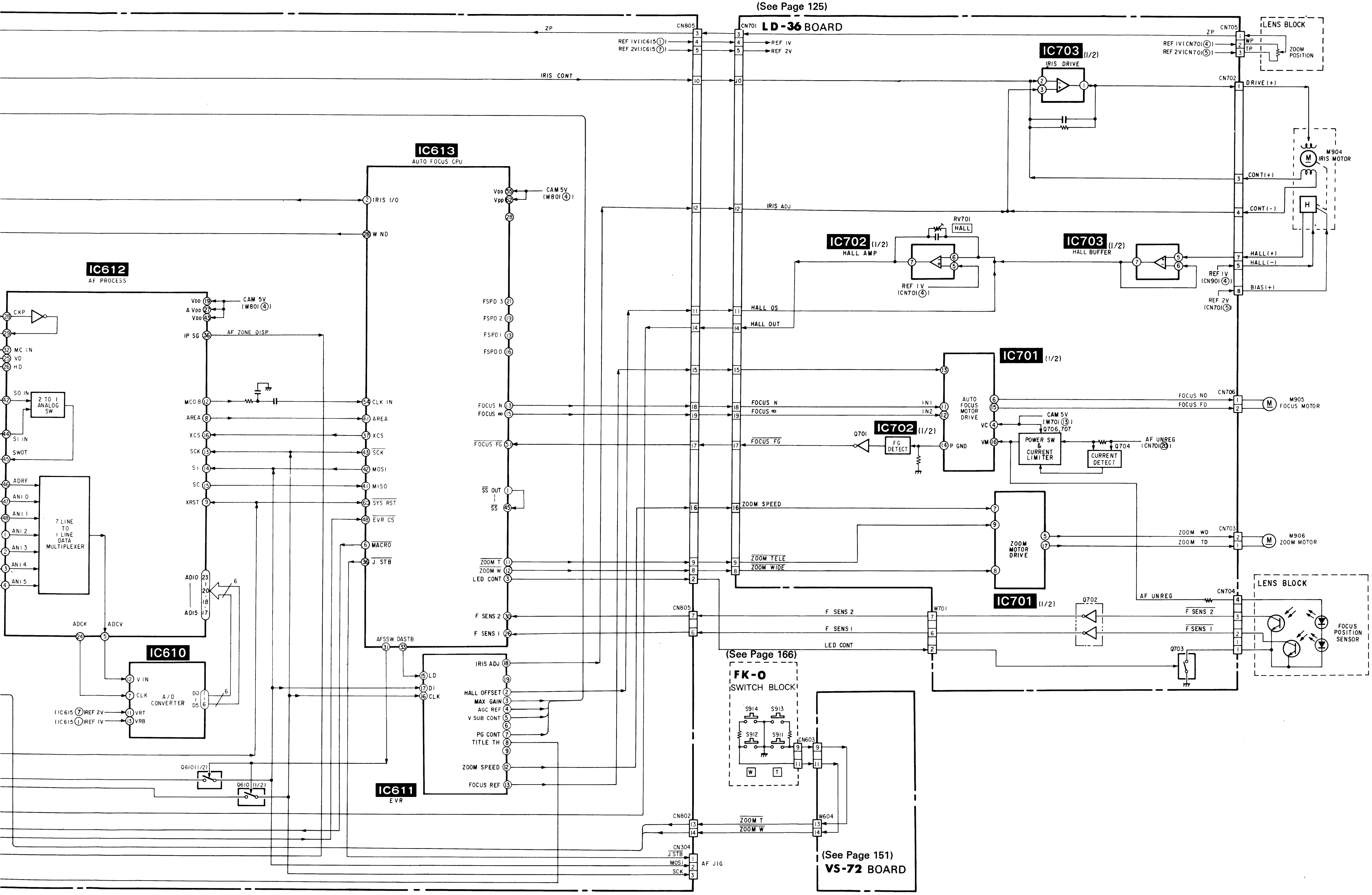

DT-77K BOARD
IC051 SIGNAL SEPARATION AGC/IRIS CONTROL
IC003 V DRIVE
IC002 TIMING GENERATOR
IC001 ROM
IC141 (1/2) TIMING GENERATOR
IC181 MATRIX
IC182 1H DELAY
IC183
SAMPL HOLD
AGC
CLAMP
LPF
CLAMP BLANKING
GATE
MAX
SLICE
MODE SWITCH
BLANKING
WINDOW
Y LPF
BUFFER
AGC DET
AGC SWITCH
IRIS DET
ATT BUFFER
28.375MHz OSC
4FSC BUFFER
SYNC GENERATOR
PHASE COMP
DIVIDER
14.2MHz BPF
AP LEVEL CONT
1H DELAY
YL-YH OUT
SW
HD MIX
ATT
DT-77 BOARD (18)
DT-77 BOARD (19)(20)(27)
DT-77K BOARD (25)
DT-77 BOARD (23)
DT-77 BOARD (10)(11)(12)
DT-77 BOARD (9)
DT-77 BOARD (3)
DT-77 BOARD (7)
DT-77 BOARD (2)
DT-77 BOARD (6)
IC181 (15)
IC181 (12)
IC181 (13)
IC141 (29)
IC141 (31)
IC141 (30)
IC141 (32)
IC141 (1)
0.36Vp-p
0.25Vp-p
0.18Vp-p
0.4Vp-p
4.8Vp-p
1Vp-p
1.8Vp-p
14.188MHz
28.375MHz


IC181
MATRIX
IC182
1H DELAY
IC183
IC251
PROCESS
IC253 (1/2)
TITLE MIX
IC301
ENCODER
CO OUT
DL C1 IN
C1 OUT
DL C2 IN
YO OUT
DLY1 IN
Y1 OUT
DL Y2 IN
R OUT
B OUT
G OUT
DC OUT
R MTX
B MTX
ID
CS GAIN
CS Y OUT
VCS GAIN
YH OUT
YL-YH OUT
Q196
BUFFER
CLAMP
Q181,182
Q192 (1/2)
Q193 (1/2)
A IN
A OUT
B IN
B OUT
C IN
C OUT
D IN
D OUT
VDD(A)
VDD
VDD(D)
CLOCK
CLAMP
CAM 5V (W801 ④)
XDL 2
XDL 1
CLP 3
C1
YO
Y1
CO
CLP O
LPF
GC
MATRIX
CR
CB
COMP
SLICE
MAX
HD MIX
Q189
Q190
Q191
BLANKING
CS Y
C BLK
HD(3)
0.25Vp-p
IC181 ⑮
0.18Vp-p
IC181 ⑫
0.4Vp-p
IC181 ⑬
Y DLOUT
FL182,183
Q184
Q194
Yδ1 IN
Y GAIN
YL IN
AGC MIX
SW
MIX
Q187
Q188
ATT
YH
Yδ CONT
1H DELAY
CLOCK
L183, C233
14.2MHz BPF
Q195
4.8Vp-p
IC141 ㉙
IC141 ㉚
IC141 ㉜
IC141 ①
B GAIN
R GAIN
DELTA B
DELTA R
C LEVEL
C PED
B CONT
R CONT
WWD+VD
C-PED
COMP
OFFSET CONT
G OUT
R-Y HUE
B-Y HUE
R-Y GAIN
B-Y GAIN
Vcc
S1 IN
S3 IN
S2 IN
DC IN
MAT GAIN2
MAT GAIN1
GATE DET
PED
YL MATRIX 1
YL MATRIX 2
GATE
YL MIX
C-δ CONT
YL-YH OUT
YH OUT
Y PED
Y-δ CONT
CAM 5V
CLP 2
0.76Vp-p
IC301 ㉔
0.6Vp-p
IC253 ⑬
0.34Vp-p
IC253 ⑪
CLAMP
R-Y/B-Y MATRIX
TR
TG
TB
Q255
Q257
PG CONT
Y(LPF) OUT
V SUB CHK
IRIS DET
IRIS CONT
YH (MIX OUT)
CAM Y
CAM C
OFFSET CONT
G OUT CHK
GND
AW ADJ
CAM ADJ
CHECK POINT ARRAY (CAP001)
A2 B3 B9 A4 A5 A6 A7 B4 B11 A11 A9 A8 A10 B7 A1 B10 B5 B6
R-Y
B-Y
CS-Y
CS AGC
BURST LEVEL
B LEVEL CONT
L ALT
4FSC
AF SC
HUE
BF
YL-YH
MODULATOR
SC
DET
1/2
1/2 & ALT
MOD
BURST GATE
BLANKING FADER SUPRESS
C OUT
C IN
Vcc(D)
Vcc(A)
FADER
VIDEO OUT
CLP 2
CHRACTER
EVF OUT
SYNC CHARACTER MIX
SHP CLP
GAIN CONTROL
WHITE CLIP
Y FADER
Y BLK
DLD
DLE NOISE
SHP LEVEL
APERTURE
Y LEVEL
SYNC LEVEL
WC
SET UP
SYNC
BLK
BLK(2)
FL303
0.18μsec DELAY
Q307
Q303
AGC CONT
L304 C348
4.43MHz BPF
Q302
Q304
DELAY
Q303
Q309
Q312
W303
CAM C
CAM Y
VIDEO (1) (VS-72)
CAM C OUT
CAM Y OUT (2)
BLK (2)
CAMERA REC
CN803
TC BLK
R337-338
TY MIX
TY BLK
DIGITAL TITLE (T1-31)
VD
HD
A/D Y
DIGITAL TITLE
TITLE Y
0.5Vp-p
IC301 ㊺
0.28Vp-p
IC301 ①
IC301 ㊵

3-4. AUTO FOCUS BLOCK DIAGRAM

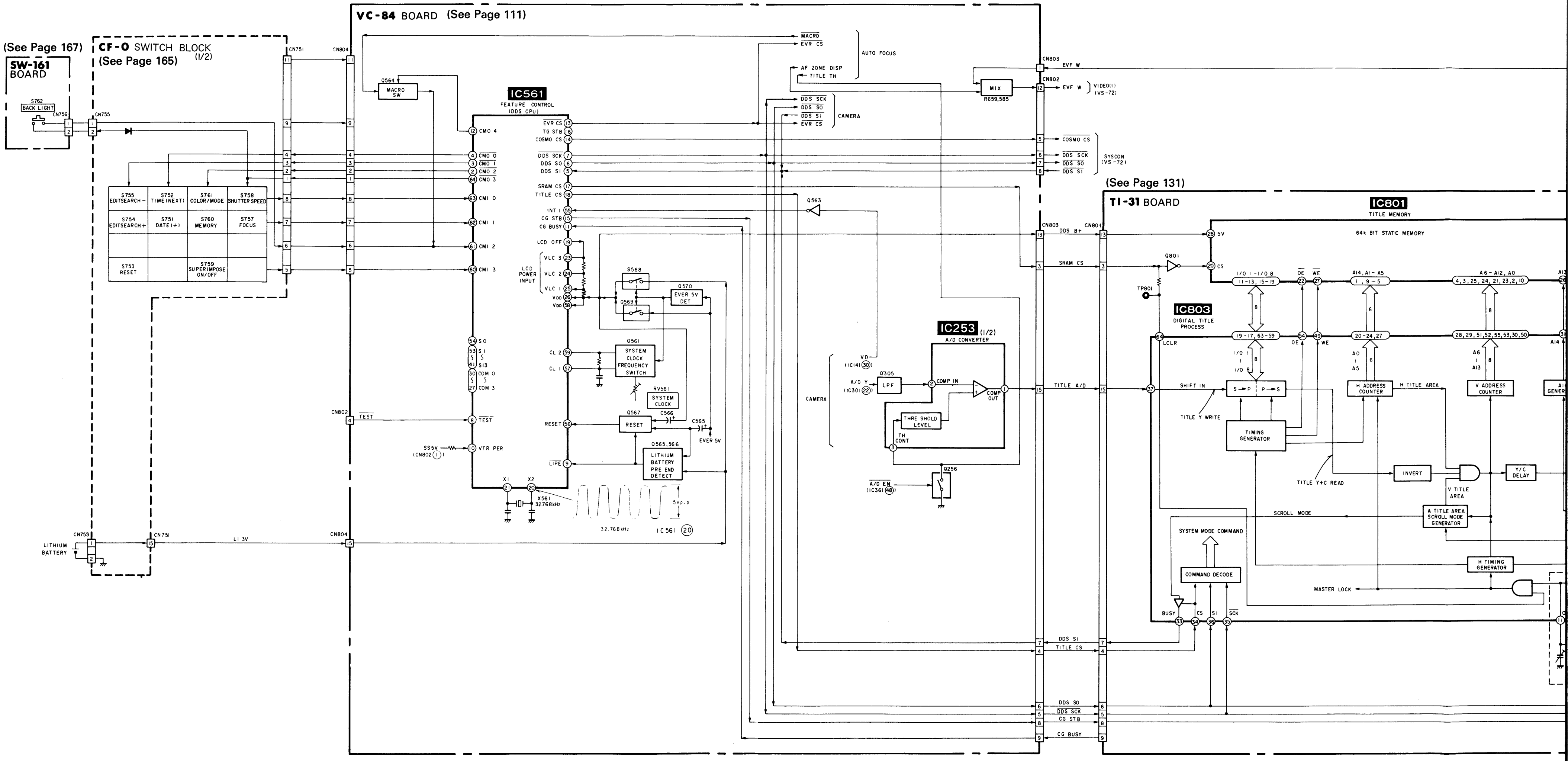


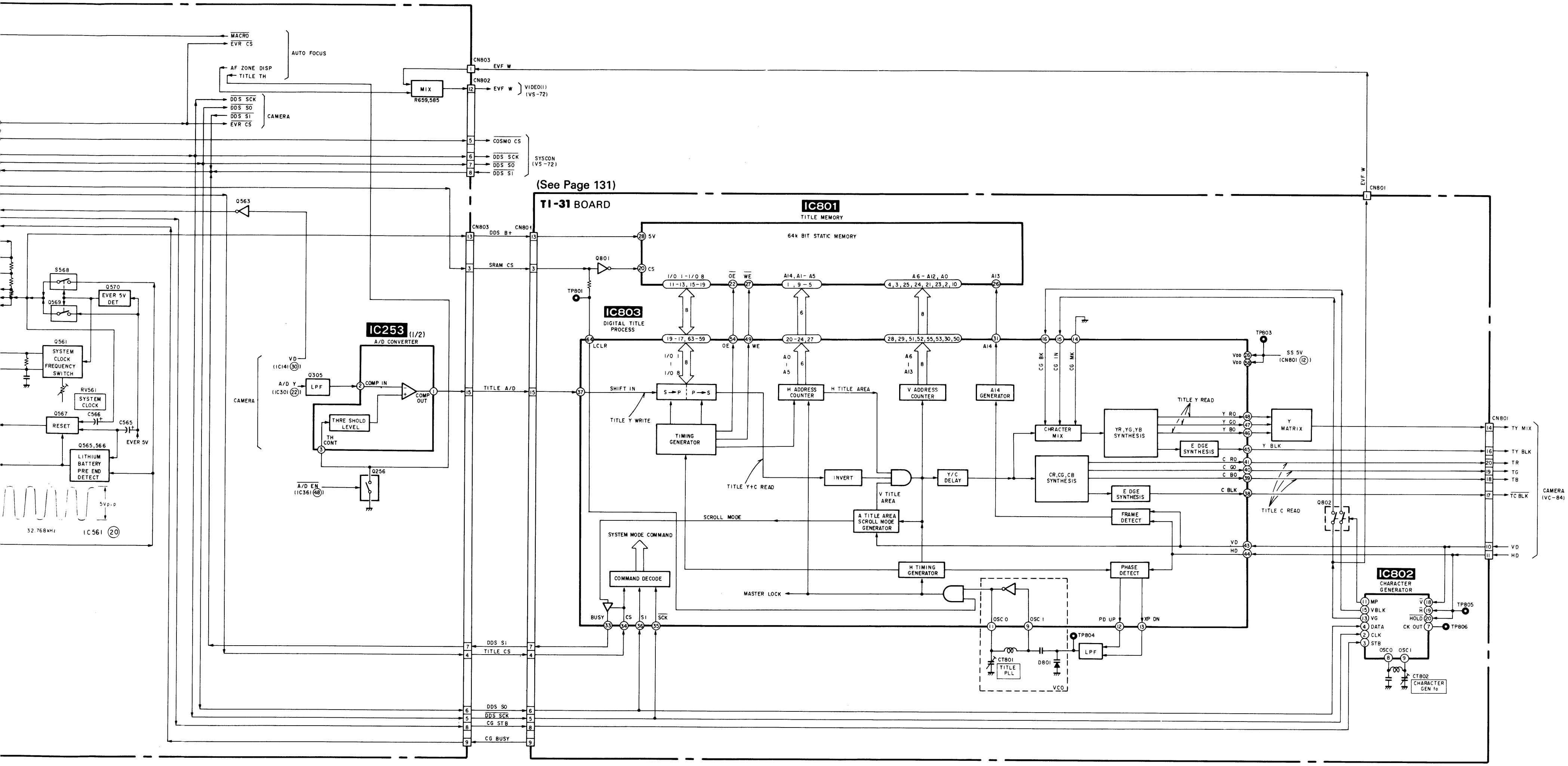
VC-84 BOARD (AUTO FOCUS)
(See Page 111)
(See Page 125)
LD-36 BOARD
CAMERA
IRIS CONT (Q102)
MAX GAIN
PG CONT
V SUB CONT
AGC REF
IRIS I/O (IC361 ⑤)
AF CLK (4FSC) (Q142)
(IC141 ㉚) VD(2)
(IC141 ㉙) HD(2)
AGC CONT(2) (Q107)
YH (AF) (Q195)
W ND (IC141 ②)
D611
Q613
HPF 1
Q614
HPF 2
2 TO 1 ANALOG SW
Q619
AMP
FL610
LPF
Q620,621
RECT
IC616
GAIN SW
IC615
AD REF
5V
REF 2V
REF 1V
IC612
AF PROCESS
CKP
MC IN
VD
HD
SO IN
SI IN
SWOT
ADRF
AN I 0
AN I 1
AN I 2
AN I 3
AN I 4
AN I 5
HALL OUT
AGC CONT
ZOOM T
ZOOM W
7 LINE TO 1 LINE DATA MULTIPLEXER
VDD
A VDD
IP SG
AF ZONE DISP
CAM 5V (W801 ④)
MCO 8
AREA
XCS
SCK
SI
SC
XRST
ADIO
ADI5
ADCK
ADCV
IC610
V IN
CLK
A/D CONVERTER
DO
D5
(IC615 ⑦) REF 2V
(IC615 ①) REF 1V
VRT
VRB
IC613
AUTO FOCUS CPU
IRIS I/O
W ND
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
MACRO
J STB
VDD
VPP
CAM 5V (W801 ④)
FSPD 3
FSPD 2
FSPD 1
FSPD 0
FOCUS N
FOCUS ∞
FOCUS FG
SS OUT
SS
ZOOM T
ZOOM W
LED CONT
F SENS 2
F SENS 1
AFSSW
DASTB
IC611
EVR
LD
DI
CLK
IRIS ADJ
HALL OFFSET
MAX GAIN
AGC REF
V SUB CONT
PG CONT
TITLE TH
ZOOM SPEED
FOCUS REF
ZP
REF 1V (IC615 ①)
REF 2V (IC615 ⑦)
IRIS CONT
CN805
CN701
REF 1V
REF 2V
IRIS ADJ
IC702 (1/2)
HALL AMP
HALL OS
HALL OUT
FOCUS N
FOCUS ∞
FOCUS FG
Q701
IC7
ZOOM SPEED
ZOOM TELE
ZOOM WIDE
F SENS 2
F SENS 1
LED CONT
(See Page 166)
FK-0
SWITCH BLOCK
S914
S913
S912
S911
W
T
CN603
W604
ZOOM T
ZOOM W
CN802
CN304
J STB
MOSI
SCK
AF JIG
(See Page 151)
VS-72 BOAR
SYSTEM CONTROL (VS-72)
SYSTEM RESET
CAM 5V
Q612
Q610 (1/2)
CAMERA
DDS SI (2)
DDS SCK 2
DIGITAL TITLE
MACRO
EVR CS
AF ZONE DISP
TITLE TH



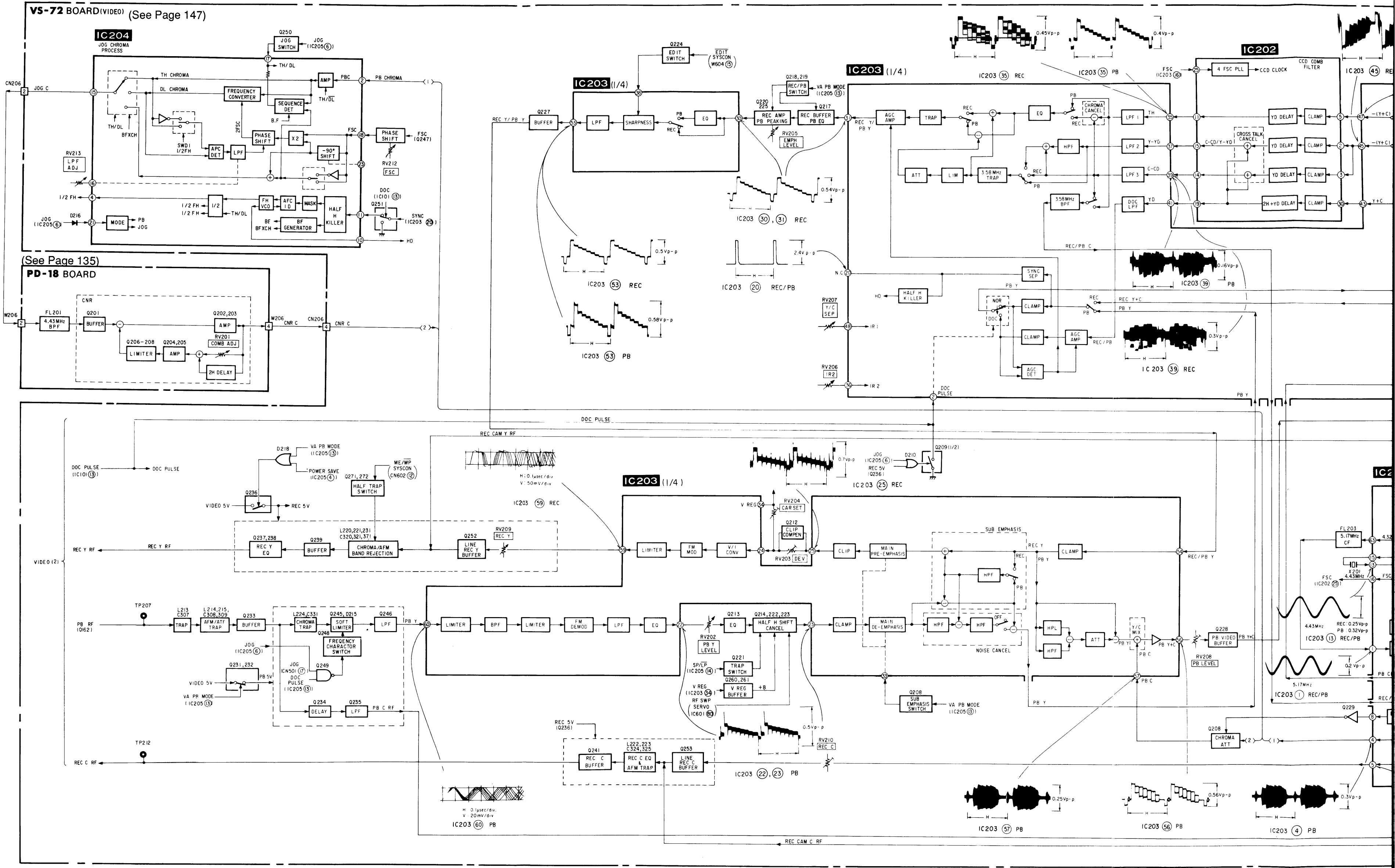
(See Page 125)
LD-36 BOARD
CN805
CN701
CN705
CN702
CN706
CN703
CN704
CN802
CN304
CN603
W701
W604
ZP
REF 1V(IC615①)
REF 2V(IC615⑦)
REF 1V
REF 2V
IRIS CONT
IRIS ADJ
HALL OS
HALL OUT
FOCUS N
FOCUS ∞
FOCUS FG
ZOOM SPEED
ZOOM TELE
ZOOM WIDE
ZOOM T
ZOOM W
LED CONT
F SENS 2
F SENS 1
LENS BLOCK
ZOOM POSITION
IC703 (1/2)
IRIS DRIVE
DRIVE(+)
M904 IRIS MOTOR
CONT(+)
CONT(-)
H
IC702 (1/2)
HALL AMP
RV701 HALL
IC703 (1/2)
HALL BUFFER
HALL(+)
HALL(-)
BIAS(+)
REF 1V (CN901④)
REF 2V (CN701⑤)
REF 1V (CN701④)
IC701 (1/2)
AUTO FOCUS MOTOR DRIVE
IN1
IN2
P GND
VC
VM
FOCUS ND
FOCUS FD
M905 FOCUS MOTOR
IC702 (1/2)
Q701
FG DETECT
CAM 5V (W701⑬)
Q706,707
POWER SW & CURRENT LIMITER
CURRENT DETECT
Q704
AF UNREG (CN701⑳)
ZOOM MOTOR DRIVE
ZOOM WD
ZOOM TD
M906 ZOOM MOTOR
IC701 (1/2)
AF UNREG
Q702
Q703
FOCUS POSITION SENSOR
IC613
AUTO FOCUS CPU
VDD
VPP
CAM 5V (W801④)
IRIS I/O
W ND
FSPD 3
FSPD 2
FSPD 1
FSPD 0
CLK IN
AREA
XCS
SCK
MOSI
MISO
SYS RST
EVR CS
MACRO
J STB
SS OUT
SS
F SENS 2
F SENS 1
AFSSW DASTB
IC612
AF PROCESS
CKP
MC IN
VD
HD
SO IN
2 TO 1 ANALOG SW
SI IN
SWOT
ADRF
ANI 0
ANI 1
ANI 2
ANI 3
ANI 4
ANI 5
7 LINE TO 1 LINE DATA MULTIPLEXER
IP SG
AF ZONE DISP
MCO 8
AREA
XCS
SCK
SI
SC
XRST
AD10
AD15
ADCK
ADCV
A VDD
IC610
A/D CONVERTER
V IN
CLK
VRT
VRB
D0
D5
(IC615⑦)REF 2V
(IC615①)REF 1V
IC611
EVR
LD
DI
CLK
IRIS ADJ
HALL OFFSET
MAX GAIN
AGC REF
V SUB CONT
PG CONT
TITLE TH
ZOOM SPEED
FOCUS REF
Q610(1/2)
Q610(1/2)
(See Page 166)
FK-0
SWITCH BLOCK
S914
S913
S912
S911
W
T
J STB
MOSI
SCK
AF JIG
(See Page 151)
VS-72 BOARD

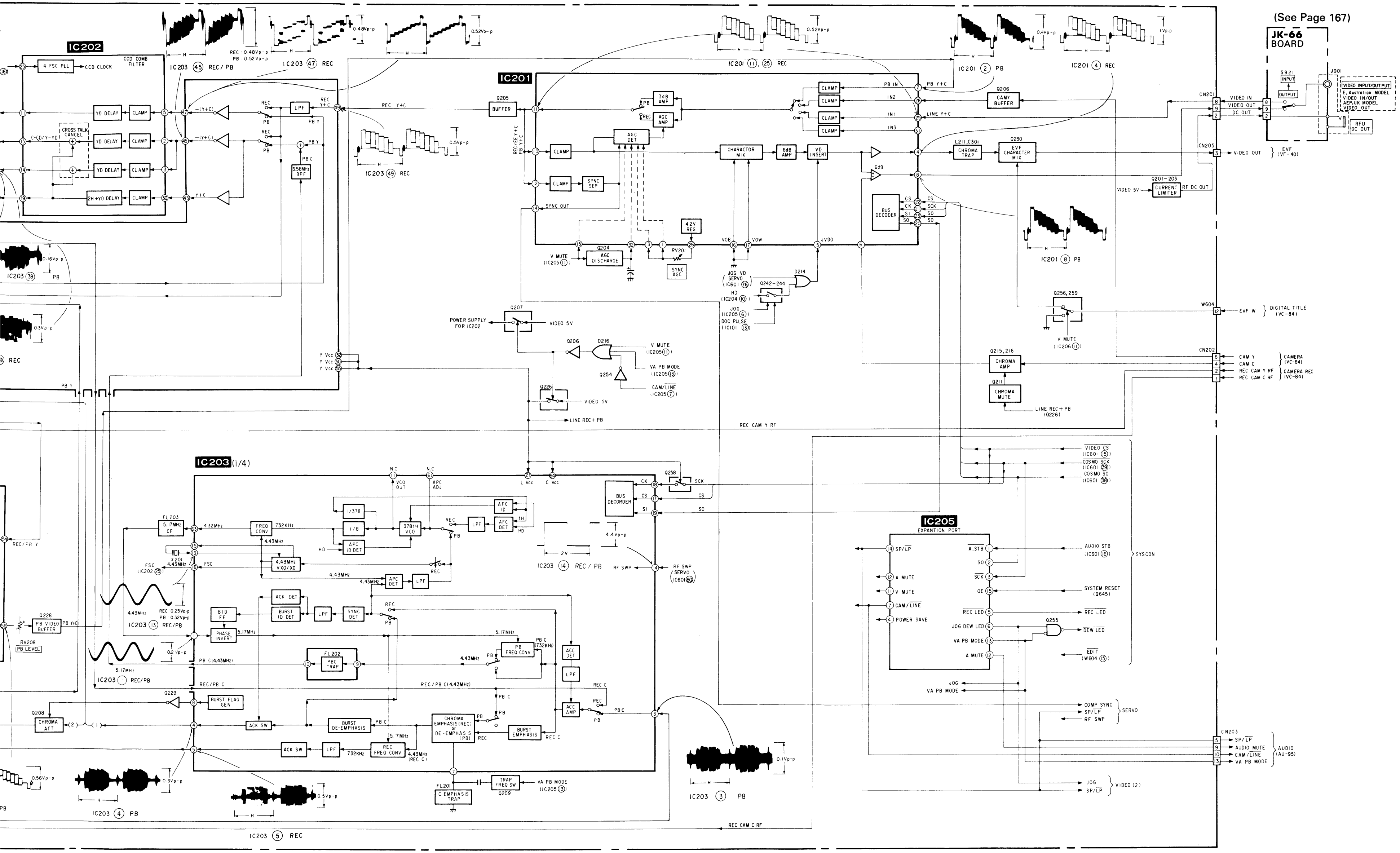
3-5. DIGITAL TITLER BLOCK DIAGRAM


(See Page 167)
SW-161 BOARD
S762 BACK LIGHT
CN756
CF-0 SWITCH BLOCK (1/2)
(See Page 165)
CN755
CN751
CN804
S755 EDITSEARCH −
S752 TIME (NEXT)
S761 COLOR/MODE
S758 SHUTTER SPEED
S754 EDITSEARCH +
S751 DATE (+)
S760 MEMORY
S757 FOCUS
S753 RESET
S759 SUPERIMPOSE ON/OFF
LITHIUM BATTERY
CN753
LI 3V
VC-84 BOARD (See Page 111)
Q564 MACRO SW
IC561 FEATURE CONTROL (DDS CPU)
CMO 4
CMO 0
CMO 1
CMO 2
CMO 3
CMI 0
CMI 1
CMI 2
CMI 3
S0
S1 ~ S13
COM 0 ~ COM 3
CN802
TEST
SS5V (CN802 ①)
VTR PER
X1
X2
X561 32.768kHz
32.768kHz
5Vp-p
IC561 ⑳
EVR CS
TG STB
COSMO CS
DDS SCK
DDS SO
DDS SI
SRAM CS
TITLE CS
INT 1
CG STB
CG BUSY
LCD OFF
LCD POWER INPUT
VLC 3
VLC 2
VLC 1
VDD
CL 2
CL 1
RESET
LIPE
S568
Q569
Q570 EVER 5V DET
Q561 SYSTEM CLOCK FREQUENCY SWITCH
RV561 SYSTEM CLOCK
Q567 RESET
C566
C565
EVER 5V
Q565,566 LITHIUM BATTERY PRE END DETECT
MACRO
EVR CS
AF ZONE DISP
TITLE TH
AUTO FOCUS
DDS SCK
DDS SO
DDS SI
EVR CS
CAMERA
Q563
CN803
EVF W
CN802
MIX R659,585
EVF W
VIDEO(1) (VS-72)
COSMO CS
DDS SCK
DDS SO
DDS SI
SYSCON (VS-72)
CAMERA
VD (IC141 ㉚)
A/D Y (IC301 ㉒)
Q305 LPF
IC253 (1/2) A/D CONVERTER
COMP IN
COMP OUT
THRE SHOLD LEVEL
TH CONT
Q256
A/D EN (IC361 ㊽)
(See Page 131)
TI-31 BOARD
CN803
CN801
DDS B+
SRAM CS
TITLE A/D
DDS SI
TITLE CS
DDS SO
DDS SCK
CG STB
CG BUSY
Q801
TP801
IC801 TITLE MEMORY
64k BIT STATIC MEMORY
5V
CS
I/O 1 - I/O 8
11-13, 15-19
OE
WE
A14, A1- A5
1, 9-5
A6 - A12, A0
4, 3, 25, 24, 21, 23, 2, 10
IC803 DIGITAL TITLE PROCESS
LCLR
19-17, 63-59
20-24, 27
28, 29, 51, 52, 55, 53, 30, 50
A14
I/O 1 ~ I/O 8
A0 ~ A5
A6 ~ A13
SHIFT IN
TITLE Y WRITE
S→P P→S
TIMING GENERATOR
H ADDRESS COUNTER
H TITLE AREA
V ADDRESS COUNTER
TITLE Y+C READ
INVERT
Y/C DELAY
V TITLE AREA
A TITLE AREA SCROLL MODE GENERATOR
SCROLL MODE
SYSTEM MODE COMMAND
COMMAND DECODE
H TIMING GENERATOR
MASTER LOCK
BUSY
CS
SI
SCK


MACRO
EVR CS
AUTO FOCUS
AF ZONE DISP
TITLE TH
DDS SCK
DDS SO
DDS SI
EVR CS
CAMERA
CN803
EVF W
CN802
MIX
R659,585
EVF W
VIDEO(1)
(VS-72)
COSMO CS
DDS SCK
DDS SO
DDS SI
SYSCON
(VS-72)
(See Page 131)
TI-31 BOARD
Q563
CN803
DDS B+
CN801
SRAM CS
S568
Q570
EVER 5V
DET
Q569
Q561
SYSTEM
CLOCK
FREQUENCY
SWITCH
RV561
SYSTEM
CLOCK
Q567
C566
RESET
C565
EVER 5V
Q565,566
LITHIUM
BATTERY
PRE END
DETECT
5Vp-p
32.768kHz
IC561 ⑳
IC253 (1/2)
A/D CONVERTER
VD
(IC141 ㉚)
A/D Y
(IC301 ㉒)
Q305
LPF
COMP IN
COMP OUT
THRE SHOLD LEVEL
TH CONT
CAMERA
A/D EN
(IC361 (48))
Q256
TITLE A/D
DDS SI
TITLE CS
DDS SO
DDS SCK
CG STB
CG BUSY
IC801
TITLE MEMORY
64k BIT STATIC MEMORY
5V
CS
I/O 1-I/O 8
11-13, 15-19
OE
WE
A14, A1-A5
1, 9-5
A6-A12, A0
4, 3, 25, 24, 21, 23, 2, 10
A13
Q801
TP801
IC803
DIGITAL TITLE
PROCESS
LCLR
19-17, 63-59
OE
WE
20-24, 27
28, 29, 51, 52, 55, 53, 30, 50
A14
I/O 1
I/O 8
A0
A5
A6
A13
SHIFT IN
S→P
P→S
TITLE Y WRITE
TIMING
GENERATOR
H ADDRESS
COUNTER
H TITLE AREA
V ADDRESS
COUNTER
A14
GENERATOR
CG BK
CG IN
CG MK
TP803
VDD
SS 5V
(CN801 ⑫)
TITLE Y READ
CHRACTER
MIX
YR, YG, YB
SYNTHESIS
Y RO
Y GO
Y BO
Y
MATRIX
E DGE
SYNTHESIS
Y BLK
C RO
C GO
C BO
CR, CG, CB
SYNTHESIS
E DGE
SYNTHESIS
C BLK
INVERT
Y/C
DELAY
TITLE Y+C READ
V TITLE
AREA
A TITLE AREA
SCROLL MODE
GENERATOR
SCROLL MODE
FRAME
DETECT
TITLE C READ
Q802
SYSTEM MODE COMMAND
COMMAND DECODE
H TIMING
GENERATOR
PHASE
DETECT
VD
HD
MASTER LOCK
BUSY
CS
SI
SCK
OSC O
OSC I
PD UP
XP DN
TP804
LPF
CT801
TITLE
PLL
D801
VCO
CN801
EVF W
TY MIX
TY BLK
TR
TG
TB
TC BLK
CAMERA
(VC-84)
VD
HD
IC802
CHARACTER
GENERATOR
MP
VBLK
VG
DATA
CLK
STB
V
H
HOLD
CK OUT
TP805
TP806
OSCO
OSCI
CT802
CHARACTER
GEN fo

3-6. VIDEO (1) BLOCK DIAGRAM

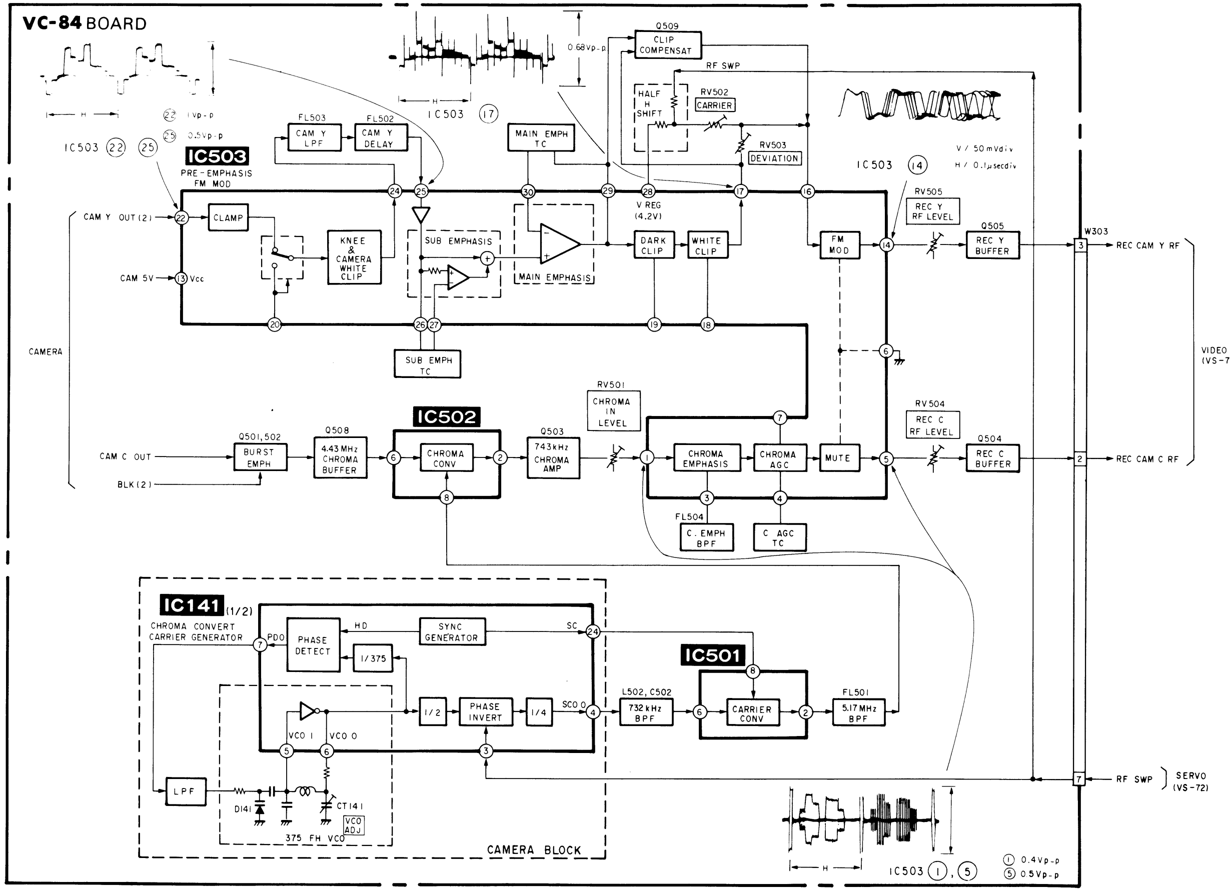

VS-72 BOARD(VIDEO) (See Page 147)
IC204
JOG CHROMA PROCESS
Q250
JOG SWITCH
JOG (IC205⑥)
TH/DL
TH CHROMA
DL CHROMA
FREQUENCY CONVERTER
AMP
PBC
PB CHROMA
SEQUENCE DET
PHASE SHIFT
X2
-90° SHIFT
FSC
PHASE SHIFT
FSC (Q247)
RV212
FSC
SWD1
1/2FH
APC DET
LPF
2FSC
BFXCH
CN206
JOG C
RV213
LPF ADJ
1/2 FH
1/2
FH VCO
AFC 1D
MASK
HALF H KILLER
BF GENERATOR
DOC (IC101⑬)
Q251
SYNC (IC203 ⑳)
HD
JOG (IC205⑥)
D216
MODE
PB
JOG
(See Page 135)
PD-18 BOARD
W206
FL201
4.43MHz BPF
CNR
Q201
BUFFER
Q202,203
AMP
RV201
COMB ADJ
Q206-208
LIMITER
Q204,205
AMP
2H DELAY
CNR C
Q224
EDIT SWITCH
EDIT SYSCON (W604 ⑤)
IC203 (1/4)
REC Y/PB Y
Q227
BUFFER
LPF
SHARPNESS
EQ
Q218,219
REC/PB SWITCH
VA PB MODE (IC205 ⑬)
Q220 225
REC AMP PB PEAKING
Q217
REC BUFFER PB EQ
RV205
EMPH LEVEL
0.54Vp-p
IC203 ㉚, ㉛ REC
0.5Vp-p
IC203 (53) REC
2.4Vp-p
IC203 ⑳ REC/PB
0.58Vp-p
IC203 (53) PB
0.45Vp-p
IC203 ㉟ REC
0.4Vp-p
IC203 ㉟ PB
IC202
CCD COMB FILTER
4 FSC PLL
CCD CLOCK
IC203 (45) REC
AGC AMP
TRAP
ATT
LIM
3.58MHz TRAP
CHROMA CANCEL
HPF
3.58MHz BPF
DOC LPF
LPF 1
LPF 2
LPF 3
TH
Y-YD
C-CD
YD
C-CD/Y-YD
CROSS TALK CANCEL
YD DELAY
2H+YD DELAY
CLAMP
REC/PB C
0.16Vp-p
IC203 (39) PB
SYNC SEP
HALF H KILLER
NOR
DOC
AGC AMP
AGC DET
RV207
Y/C SEP
IR1
RV206
IR2
0.3Vp-p
IC 203 (39) REC
DOC PULSE
DOC PULSE (IC101⑬)
REC CAM Y RF
D218
VA PB MODE (IC205⑬)
POWER SAVE (IC205④)
Q271,272
HALF TRAP SWITCH
ME/MP SYSCON (CN602 ②)
Q236
VIDEO 5V
REC 5V
H: 0.1μsec/div V: 50mV/div
IC203 (59) REC
REC Y RF
Q237,238
REC Y EQ
Q239
BUFFER
L220,221,231 C320,321,371
CHROMA/AFM BAND REJECTION
Q252
LINE REC Y BUFFER
RV209
REC Y
VIDEO (2)
IC203 (1/4)
LIMITER
FM MOD
V/I CONV
V REG
RV204
CARSET
Q212
CLIP COMPEN
RV203 DEV
CLIP
MAIN PRE-EMPHASIS
SUB EMPHASIS
HPF
REC/PB Y
0.7Vp-p
JOG (IC205⑥)
D210
REC 5V (Q236)
Q209(1/2)
IC203 ㉕ REC
TP207
PB RF (Q162)
L213 C307
TRAP
L214,215, C308,309
AFM/ATF TRAP
Q233
BUFFER
L224,C331
CHROMA TRAP
Q245, D215
SOFT LIMITER
Q248
FREQUENCY CHARACTOR SWITCH
Q246
LPF
JOG (IC205⑥)
JOG (CN501⑰)
DOC PULSE (IC205⑬)
Q249
Q231,232
PB 5V
VA PR MODE (IC205⑬)
Q234
DELAY
Q235
PB C RF
LIMITER
BPF
FM DEMOD
EQ
RV202
PB Y LEVEL
Q213
Q214,222,223
HALF H SHIFT CANCEL
SP/LP (IC205⑭)
Q221
TRAP SWITCH
V REG (IC203 (54))
Q260,261
V REG BUFFER
RF SWP SERVO (IC601 (55))
+B
MAIN DE-EMPHASIS
NOISE CANCEL
OFF
ATT
Y/C MIX
PB Y+C
Q228
PB VIDEO BUFFER
RV208
PB LEVEL
Q208
SUB EMPHASIS SWITCH
VA PB MODE (IC205⑬)
Q208
CHROMA ATT
0.5Vp-p
RV210
REC C
IC203 ㉒,㉓ PB
TP212
REC C RF
REC 5V (Q236)
Q241
REC C BUFFER
L222,223 C324,325
REC C EQ & AFM TRAP
Q253
LINE REC C BUFFER
H: 0.1μsec/div V: 20mV/div
IC203 (60) PB
0.25Vp-p
IC203 (57) PB
0.56Vp-p
IC203 (56) PB
0.3Vp-p
IC203 ④ PB
REC CAM C RF
FL203
5.17MHz CF
X201 4.43MHz
FSC (IC202 ㉕)
4.43MHz
REC 0.25Vp-p PB 0.32Vp-p
IC203 ⑬ REC/PB
0.2Vp-p
5.17MHz
IC203 ① REC/PB
Q229



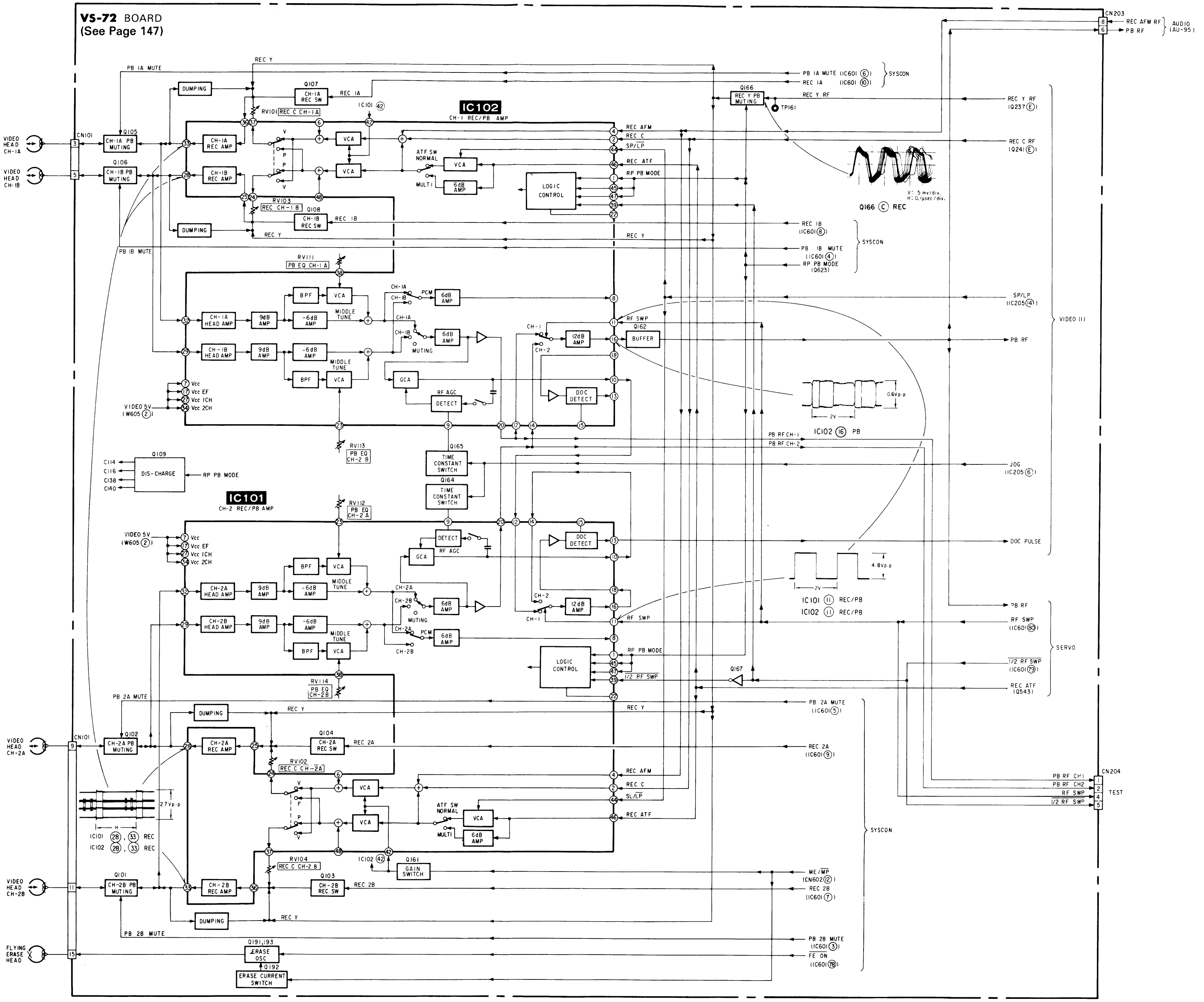
(See Page 167)
JK-66 BOARD
IC202
4 FSC PLL
CCD CLOCK
CCD COMB FILTER
YD DELAY
CLAMP
CROSS TALK CANCEL
C-(D/Y-YD)
2H+YD DELAY
IC203 (45) REC/PB
REC: 0.48Vp-p
PB: 0.52Vp-p
IC203 (47) REC
0.48Vp-p
0.52Vp-p
IC203 (49) REC
0.5Vp-p
LPF
3.58MHz BPF
REC Y+C
PB Y
PB C
IC201
Q205 BUFFER
3dB AMP
AGC AMP
AGC DET
CLAMP
SYNC SEP
SYNC OUT
CHARACTOR MIX
6dB AMP
VD INSERT
BUS DECODER
42V REG
Q204 AGC DISCHARGE
RV201
SYNC AGC
V MUTE (IC205 (11))
VOB
VOW
JVDD
JOG VD SERVO (IC601 (76))
HD (IC204 (10))
JOG (IC205 (6))
DOC PULSE (IC101 (13))
Q242-244
D214
IC201 (11), (25) REC
0.52Vp-p
IC201 (2) PB
0.4Vp-p
IC201 (4) REC
1Vp-p
PB IN
IN2
IN1
IN3
PB Y+C
LINE Y+C
Q206 CAMY BUFFER
L211, C301 CHROMA TRAP
Q230 EVF CHARACTER MIX
6dB
CS CK SI SO
SCK
Q201-203 CURRENT LIMITER
VIDEO 5V
RF DC OUT
IC201 (8) PB
CN201
VIDEO IN
VIDEO OUT
DC OUT
CN205
VIDEO OUT
EVF (VF-40)
S921 INPUT OUTPUT
J901
VIDEO INPUT/OUTPUT
E, Australian MODEL
VIDEO IN/OUT
AEP, UK MODEL
VIDEO OUT
RFU DC OUT
Q256, 259
V MUTE (IC206 (11))
W604
EVF W
DIGITAL TITLE (VC-84)
CN202
CAM Y
CAM C
REC CAM Y RF
REC CAM C RF
CAMERA (VC-84)
CAMERA REC (VC-84)
Q215, 216 CHROMA AMP
Q211 CHROMA MUTE
LINE REC+PB (Q226)
Q207
POWER SUPPLY FOR IC202
VIDEO 5V
Q206
D216
V MUTE (IC205 (11))
VA PB MODE (IC205 (13))
Q254
CAM/LINE (IC205 (7))
Q226
LINE REC+PB
REC CAM Y RF
Y Vcc
PB Y
IC203 (39) PB
0.16Vp-p
0.3Vp-p
REC
IC203 (1/4)
N.C
VCO OUT
APC ADJ
L Vcc
C Vcc
Q258
BUS DECORDER
CK CS SI
SCK CS SO
1/378
1/8
378fH VCO
AFC ID
AFC DET
LPF
APC ID DET
HD
FL203 5.17MHz CF
4.32MHz
FREQ CONV
732KHz
4.43MHz
X201 4.43MHz
FSC (IC202 (29))
4.43MHz VXO/XO
APC DET
REC
IC203 (14) REC/PB
4.4Vp-p
2V
RF SWP
RF SWP (SERVO) (IC601 (82))
ACK DET
BURST ID DET
SYNC DET
BID FF
PHASE INVERT
5.17MHz
IC203 (13) REC/PB
REC: 0.25Vp-p
PB: 0.32Vp-p
Q228 PB VIDEO BUFFER
PB Y+C
RV208 PB LEVEL
REC/PB Y
0.2Vp-p
PB C (4.43MHz)
FL202 PBC TRAP
PB FREQ CONV
PB C 732KHz
ACC DET
IC203 (1) REC/PB
REC/PB C
REC/PB C (4.43MHz)
REC C
Q229
BURST FLAG GEN
Q208 CHROMA ATT
ACK SW
BURST DE-EMPHASIS
CHROMA EMPHASIS (REC) or DE-EMPHASIS (PB)
BURST EMPHASIS
ACC AMP
PB C
REC FREQ CONV
4.43MHz (REC C)
FL201 C EMPHASIS TRAP
TRAP FREQ SW Q209
VA PB MODE (IC205 (13))
0.1Vp-p
IC203 (3) PB
0.56Vp-p
0.3Vp-p
IC203 (4) PB
0.5Vp-p
IC203 (5) REC
REC CAM C RF
IC205 EXPANTION PORT
SP/LP
A MUTE
V MUTE
CAM/LINE
POWER SAVE
A.STB
SO
SCK
OE
REC LED
JOG DEW LED
VA PB MODE
A MUTE
VIDEO CS (IC601 (15))
COSMO SCK (IC601 (59))
COSMO SO (IC601 (58))
AUDIO STB (IC601 (16))
SYSCON
SYSTEM RESET (Q645)
REC LED
Q255
DEW LED
EDIT (W604 (5))
JOG
VA PB MODE
COMP SYNC
SP/LP
RF SWP
SERVO
CN203
SP/LP
AUDIO MUTE
CAM/LINE
VA PB MODE
AUDIO (AU-95)
JOG
SP/LP
VIDEO (2)

3-7. CAMERA REC BLOCK DIAGRAM

(See Page 116)

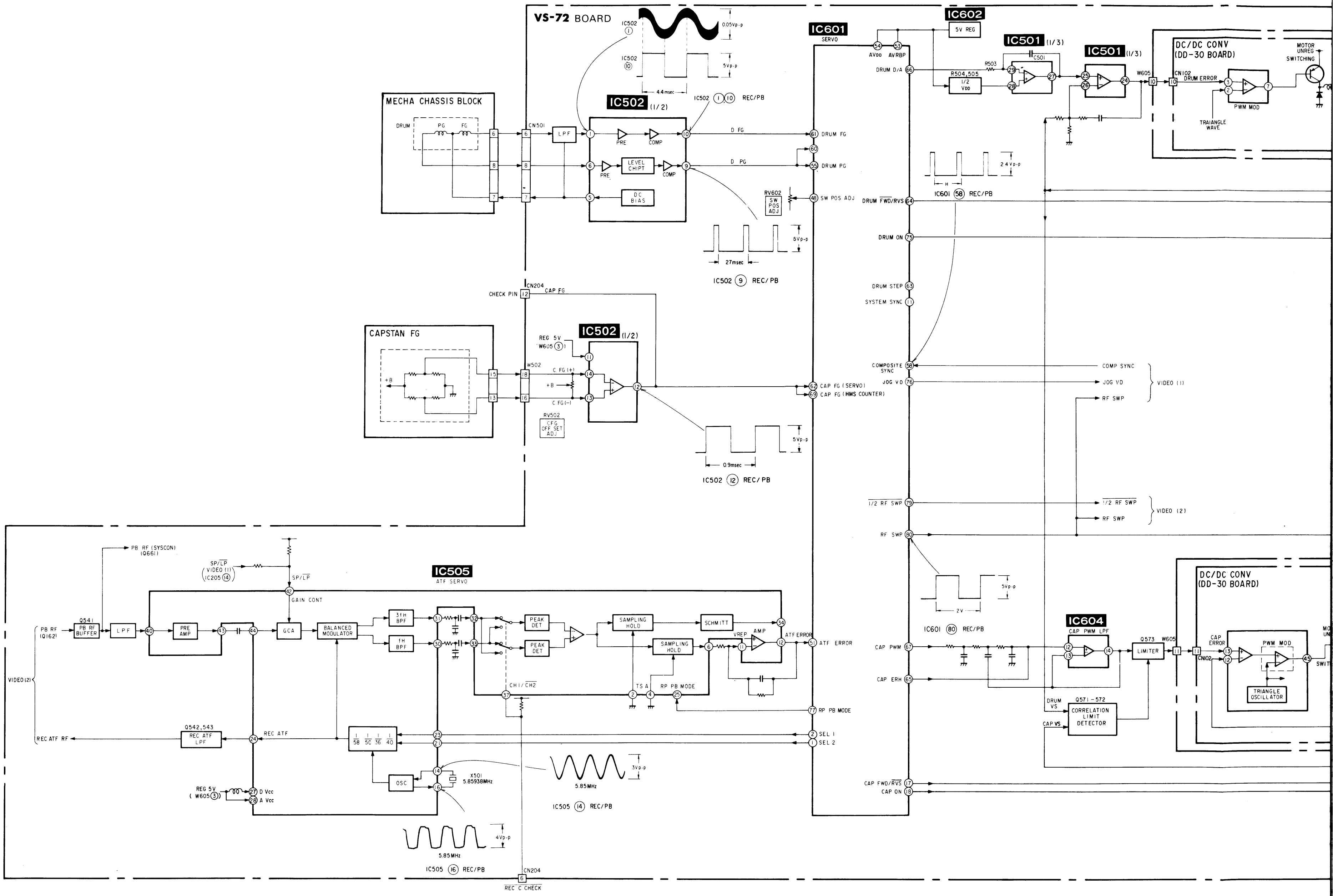

VC-84 BOARD
H
㉒ 1Vp-p
㉕ 0.5Vp-p
IC503 ㉒ ㉕
IC503
PRE-EMPHASIS
FM MOD
CAM Y OUT (2)
22
CLAMP
CAM 5V
13 Vcc
KNEE & CAMERA WHITE CLIP
20
FL503
CAM Y LPF
FL502
CAM Y DELAY
24
25
SUB EMPHASIS
26
27
SUB EMPH TC
H
IC503 ⑰
0.68Vp-p
MAIN EMPH TC
30
MAIN EMPHASIS
29
Q509
CLIP COMPENSAT
RF SWP
HALF H SHIFT
RV502
CARRIER
RV503
DEVIATION
28
V REG (4.2V)
17
16
DARK CLIP
WHITE CLIP
19
18
FM MOD
IC503 ⑭
V / 50mVdiv
H / 0.1μsecdiv
14
RV505
REC Y RF LEVEL
Q505
REC Y BUFFER
6
W303
3
REC CAM Y RF
VIDEO (1) (VS-72)
CAMERA
CAM C OUT
BLK (2)
Q501, 502
BURST EMPH
Q508
4.43 MHz CHROMA BUFFER
IC502
6
CHROMA CONV
2
8
Q503
743kHz CHROMA AMP
RV501
CHROMA IN LEVEL
1
CHROMA EMPHASIS
CHROMA AGC
7
MUTE
5
3
4
FL504
C. EMPH BPF
C AGC TC
RV504
REC C RF LEVEL
Q504
REC C BUFFER
2
REC CAM C RF
IC141 (1/2)
CHROMA CONVERT
CARRIER GENERATOR
7
PDO
PHASE DETECT
HD
SYNC GENERATOR
SC
24
1/375
VCO I
VCO O
5
6
1/2
PHASE INVERT
1/4
SCO 0
4
3
LPF
D141
CT141
VCO ADJ
375 FH VCO
CAMERA BLOCK
IC501
8
L502, C502
732 kHz BPF
6
CARRIER CONV
2
FL501
5.17 MHz BPF
7
RF SWP
SERVO (VS-72)
H
IC503 ①, ⑤
① 0.4Vp-p
⑤ 0.5Vp-p

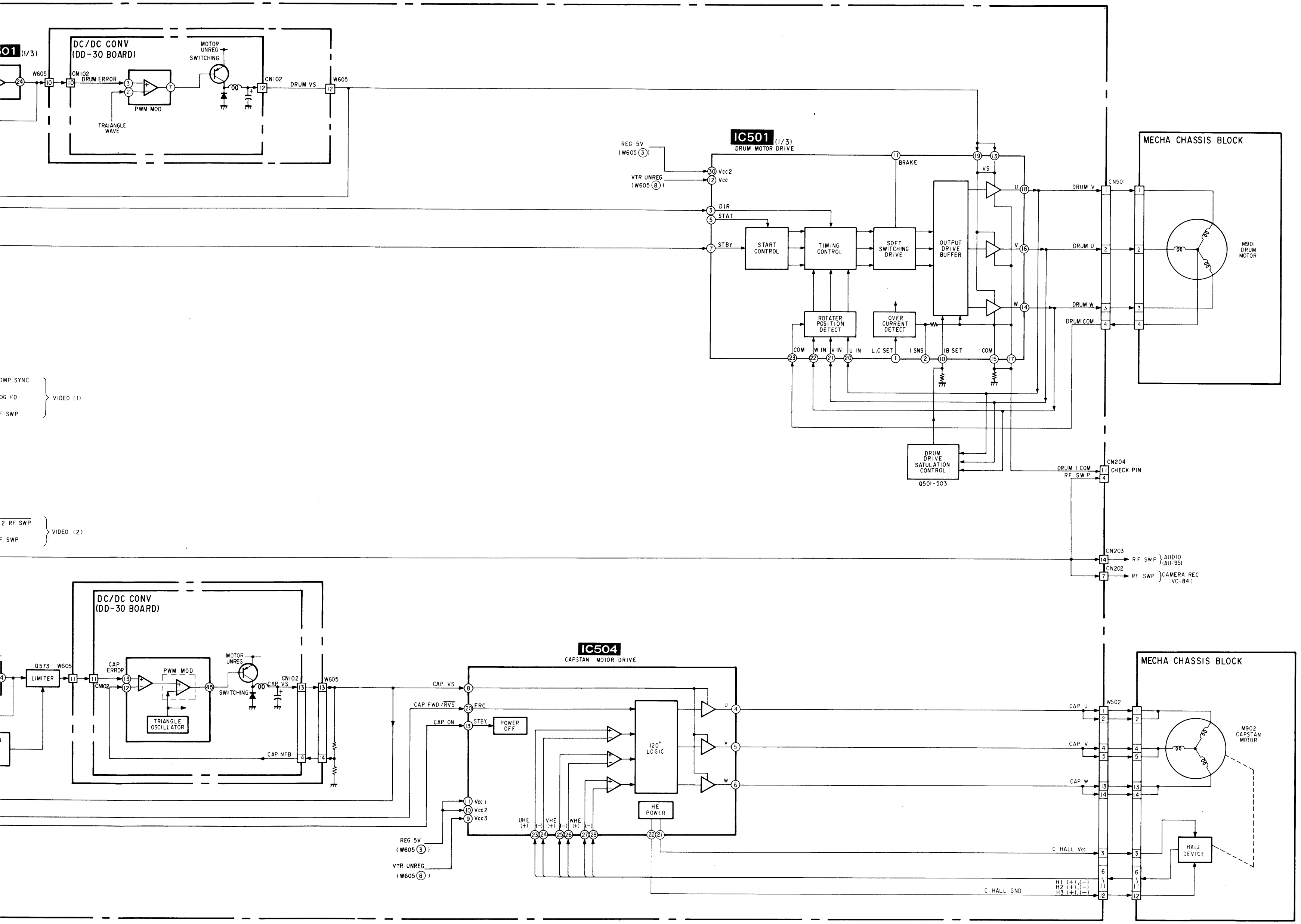
3-8. VIDEO (2) BLOCK DIAGRAM


VS-72 BOARD
(See Page 147)
VIDEO HEAD CH-1A
VIDEO HEAD CH-1B
VIDEO HEAD CH-2A
VIDEO HEAD CH-2B
FLYING ERASE HEAD
CN101
Q105
CH-1A PB MUTING
Q106
CH-1B PB MUTING
PB 1A MUTE
PB 1B MUTE
REC Y
DUMPING
Q107
CH-1A REC SW
REC 1A
RV101 REC C CH-1A
IC101 42
IC102
CH-1 REC/PB AMP
CH-1A REC AMP
CH-1B REC AMP
VCA
V
P
RV103 REC CH-1B
Q108
CH-1B REC SW
REC 1B
ATF SW NORMAL
MULTI
6dB AMP
LOGIC CONTROL
REC AFM
REC C
SP/LP
REC ATF
RP PB MODE
RV111 PB EQ CH-1A
BPF
CH-1A HEAD AMP
CH-1B HEAD AMP
9dB AMP
-6dB AMP
MIDDLE TUNE
CH-1A
CH-1B
PCM
MUTING
GCA
RF AGC
DETECT
Vcc
Vcc EF
Vcc 1CH
Vcc 2CH
VIDEO 5V (W605 ②)
CH-1
CH-2
12dB AMP
RF SWP
Q162
BUFFER
DOC DETECT
RV113 PB EQ CH-2B
Q165
TIME CONSTANT SWITCH
Q164
TIME CONSTANT SWITCH
Q109
DIS-CHARGE
C114
C116
C138
C140
RP PB MODE
IC101
CH-2 REC/PB AMP
RV112 PB EQ CH-2A
CH-2A HEAD AMP
CH-2B HEAD AMP
CH-2A
CH-2B
RV114 PB EQ CH-2B
PB 2A MUTE
Q102
CH-2A PB MUTING
Q104
CH-2A REC SW
REC 2A
CH-2A REC AMP
RV102 REC C CH-2A
F
2.7Vp-p
H
IC101 ㉘, ㉝ REC
IC102 ㉘, ㉝ REC
Q101
CH-2B PB MUTING
CH-2B REC AMP
RV104 REC C CH-2B
IC102 42
Q161
GAIN SWITCH
Q103
CH-2B REC SW
REC 2B
PB 2B MUTE
Q191,193
ERASE OSC
Q192
ERASE CURRENT SWITCH
SL/LP
1/2 RF SWP
Q167
Q166
REC Y PB MUTING
REC Y RF
TP161
V: 5 mv/div.
H: 0.1μsec/div.
Q166 Ⓒ REC
0.6Vp-p
2V
IC102 ⑯ PB
PB RF CH-1
PB RF CH-2
4.8Vp-p
IC101 ⑪ REC/PB
IC102 ⑪ REC/PB
CN203
REC AFM RF
PB RF
AUDIO (AU-95)
PB 1A MUTE (IC601 ⑥)
REC 1A (IC601 ⑩)
SYSCON
REC Y RF (Q237 Ⓔ)
REC C RF (Q241 Ⓔ)
REC 1B (IC601 ⑧)
PB 1B MUTE (IC601 ④)
RP PB MODE (Q623)
SYSCON
SP/LP (IC205 ⑭)
VIDEO (1)
PB RF
JOG (IC205 ⑥)
DOC PULSE
PB RF
RF SWP (IC601 ⑳)
1/2 RF SWP (IC601 ㉓)
REC ATF (Q543)
SERVO
PB 2A MUTE (IC601 ⑤)
REC 2A (IC601 ⑨)
ME/MP (CN602 ⑫)
REC 2B (IC601 ⑦)
PB 2B MUTE (IC601 ③)
FE ON (IC601 ㉘)
SYSCON
CN204
PB RF CH1
PB RF CH2
RF SWP
1/2 RF SWP
TEST

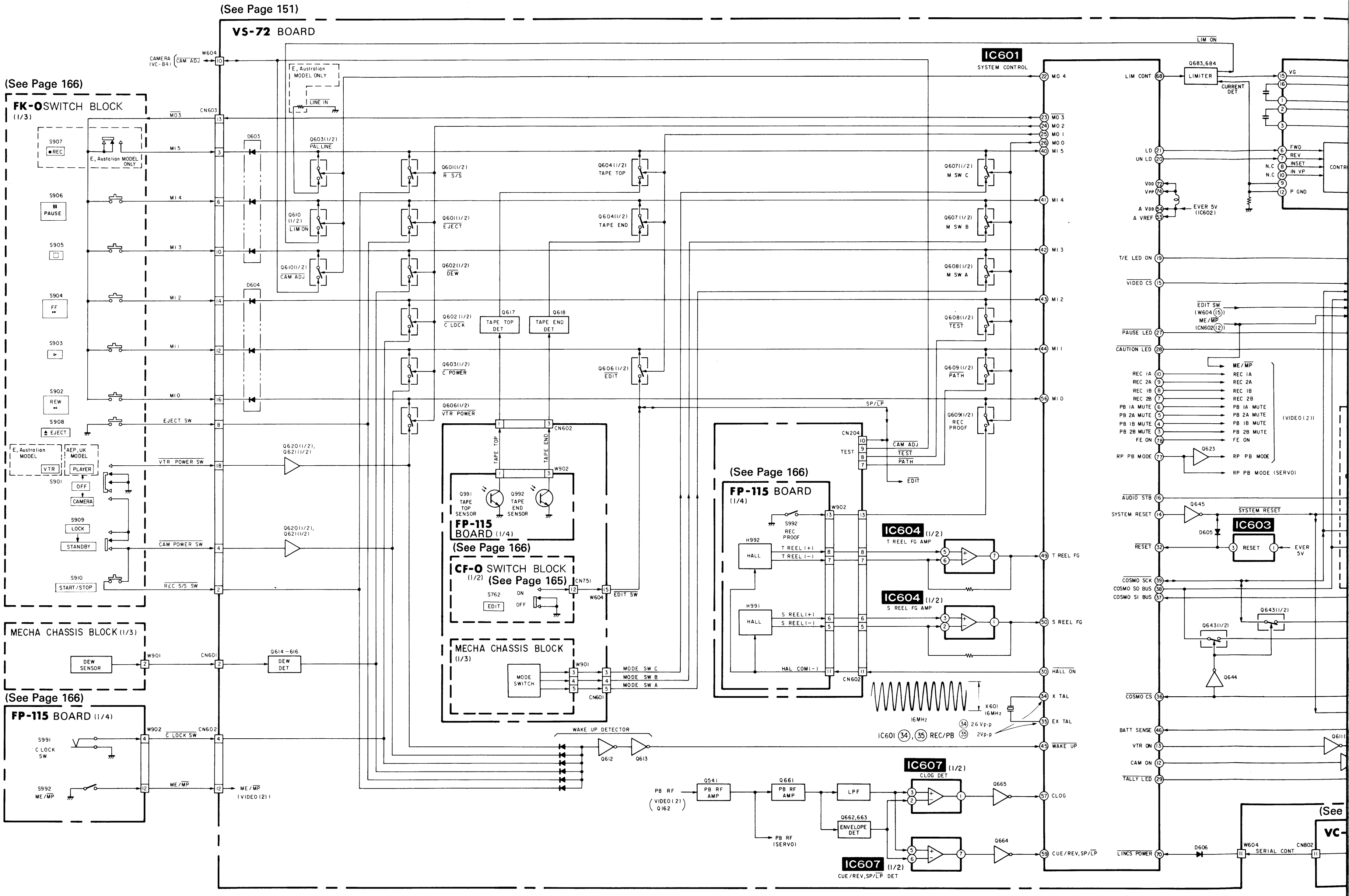
3-9. SERVO BLOCK DIAGRAM

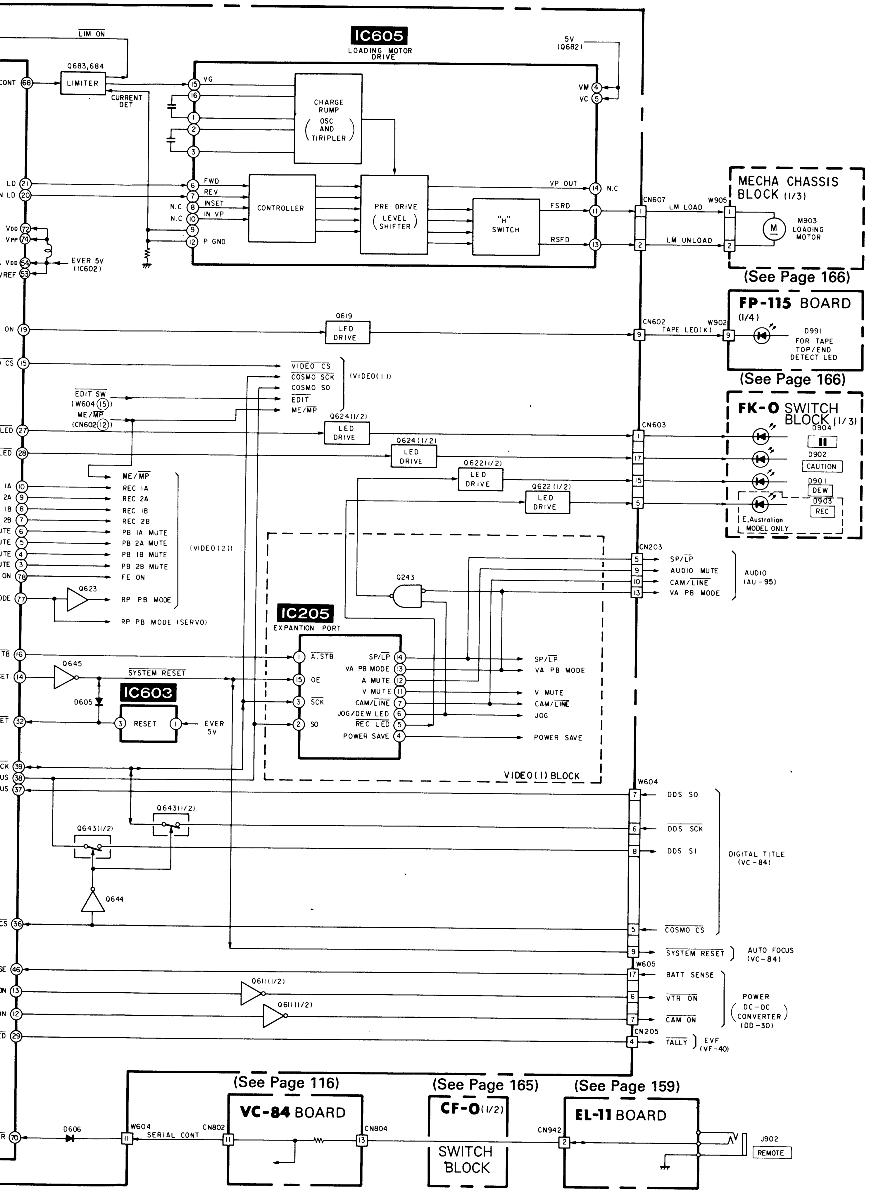
(See Page 151)


VS-72 BOARD
MECHA CHASSIS BLOCK
DRUM
PG
FG
CN501
LPF
IC502 (1/2)
PRE
COMP
LEVEL CHIPT
DC BIAS
D FG
D PG
IC502 ① ⑩ REC/PB
0.05Vp-p
5Vp-p
4.4msec
IC601
SERVO
DRUM FG
DRUM PG
SW POS ADJ
RV602 SW POS ADJ
27msec
IC502 ⑨ REC/PB
CN204
CHECK PIN
CAP FG
CAPSTAN FG
REG 5V
W605 ③
W502
C FG (+)
C FG (−)
RV502 CFG OFF SET ADJ
CAP FG (SERVO)
CAP FG (HMS COUNTER)
0.9msec
IC502 ⑫ REC/PB
IC602
5V REG
AVDD
AVRBP
DRUM D/A
R503
R504,505
1/2 VDD
C501
IC501 (1/3)
W605
DC/DC CONV (DD-30 BOARD)
CN102
DRUM ERROR
PWM MOD
TRAIANGLE WAVE
MOTOR UNREG SWITCHING
2.4Vp-p
H
IC601 58 REC/PB
DRUM FWD/RVS
DRUM ON
DRUM STEP
SYSTEM SYNC
COMPOSITE SYNC
JOG VD
COMP SYNC
RF SWP
VIDEO (1)
1/2 RF SWP
VIDEO (2)
2V
IC601 80 REC/PB
CAP PWM
CAP ERH
IC604
CAP PWM LPF
Q573
LIMITER
CAP ERROR
TRIANGLE OSCILLATOR
DRUM VS
CAP VS
Q571-572
CORRELATION LIMIT DETECTOR
CAP FWD/RVS
CAP ON
PB RF (SYSCON) (Q661)
SP/LP
VIDEO (1)
(IC205 ⑭)
IC505
ATF SERVO
GAIN CONT
PB RF (Q162)
Q541
PB RF BUFFER
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
PEAK DET
SAMPLING HOLD
SCHMITT
VREP
AMP
ATF ERROR
CH1/CH2
TS A
RP PB MODE
SEL 1
SEL 2
VIDEO (2)
REC ATF RF
Q542,543
REC ATF LPF
REC ATF
1/58 1/5C 1/36 1/40
OSC
X501 5.85938MHz
3Vp-p
5.85MHz
IC505 ⑭ REC/PB
REG 5V
(W605 ③)
D Vcc
A Vcc
4Vp-p
5.85MHz
IC505 ⑯ REC/PB
REC C CHECK


DC/DC CONV
(DD-30 BOARD)
MOTOR UNREG
SWITCHING
W605
CN102
DRUM ERROR
PWM MOD
TRAIANGLE WAVE
DRUM VS
IC501 (1/3)
DRUM MOTOR DRIVE
REG 5V (W605 ③)
VTR UNREG (W605 ⑧)
Vcc2
Vcc
DIR
STAT
STBY
BRAKE
VS
START CONTROL
TIMING CONTROL
SOFT SWITCHING DRIVE
OUTPUT DRIVE BUFFER
ROTATER POSITION DETECT
OVER CURRENT DETECT
COM
W IN
V IN
U IN
L.C SET
I SNS
IB SET
I COM
DRUM DRIVE SATULATION CONTROL
Q501-503
DRUM V
DRUM U
DRUM W
DRUM COM
CN501
MECHA CHASSIS BLOCK
M901 DRUM MOTOR
CN204
DRUM I COM
RF SWP
CHECK PIN
CN203
RF SWP AUDIO (AU-95)
CN202
RF SWP CAMERA REC (VC-84)
COMP SYNC
DG VD
RF SWP
VIDEO (1)
2 RF SWP
RF SWP
VIDEO (2)
Q573
LIMITER
CAP ERROR
TRIANGLE OSCILLATOR
CAP VS
CAP NFB
IC504
CAPSTAN MOTOR DRIVE
CAP FWD/RVS
CAP ON
FRC
POWER OFF
120° LOGIC
HE POWER
Vcc1
Vcc2
Vcc3
REG 5V (W605 ③)
VTR UNREG (W605 ⑧)
UHE (+) (−)
VHE (+) (−)
WHE (+) (−)
W502
CAP U
CAP V
CAP W
C HALL Vcc
C HALL GND
H1 (+),(−)
H2 (+),(−)
H3 (+),(−)
M902 CAPSTAN MOTOR
HALL DEVICE

3-10. SYSTEM CONTROL BLOCK DIAGRAM


(See Page 151)
VS-72 BOARD
(See Page 166)
FK-O SWITCH BLOCK (1/3)
S907 ●REC
E, Australian MODEL ONLY
S906 II PAUSE
S905 □
S904 FF ▸▸
S903 ▸
S902 REW ◂◂
S908 ▲ EJECT
E, Australian MODEL
AEP, UK MODEL
VTR
PLAYER
S901
OFF
CAMERA
S909
LOCK
STANDBY
S910 START/STOP
MO3
MI5
MI4
MI3
MI2
MI1
MI0
EJECT SW
VTR POWER SW
CAM POWER SW
REC S/S SW
CN603
CAMERA (VC-84)
CAM ADJ
W604
D603
D604
E, Australian MODEL ONLY
LINE IN
Q603(1/2) PAL LINE
Q610 (1/2) LIM ON
Q610(1/2) CAM ADJ
Q601(1/2) R S/S
Q601(1/2) EJECT
Q602(1/2) DEW
Q602(1/2) C LOCK
Q603(1/2) C POWER
Q606(1/2) VTR POWER
Q620(1/2), Q621(1/2)
Q617 TAPE TOP DET
Q618 TAPE END DET
Q604(1/2) TAPE TOP
Q604(1/2) TAPE END
Q606(1/2) EDIT
Q607(1/2) M SW C
Q607(1/2) M SW B
Q608(1/2) M SW A
Q608(1/2) TEST
Q609(1/2) PATH
Q609(1/2) REC PROOF
SP/LP
CN602
TAPE TOP
TAPE END
W902
Q991 TAPE TOP SENSOR
Q992 TAPE END SENSOR
FP-115 BOARD (1/4)
(See Page 166)
CF-O SWITCH BLOCK (1/2) (See Page 165)
S762 EDIT
ON
OFF
CN751
W604
EDIT SW
MECHA CHASSIS BLOCK (1/3)
MODE SWITCH
W901
CN601
MODE SW C
MODE SW B
MODE SW A
MECHA CHASSIS BLOCK (1/3)
DEW SENSOR
Q614-616 DEW DET
(See Page 166)
FP-115 BOARD (1/4)
S991 C LOCK SW
S992 ME/MP
C LOCK SW
ME/MP
ME/MP (VIDEO(2))
WAKE UP DETECTOR
Q612
Q613
CN204
CAM ADJ
TEST
PATH
EDIT
(See Page 166)
FP-115 BOARD (1/4)
S992 REC PROOF
H992 HALL
T REEL (+)
T REEL (−)
H991 HALL
S REEL (+)
S REEL (−)
HAL COM (−)
IC604 (1/2) T REEL FG AMP
IC604 (1/2) S REEL FG AMP
16MHz
X601 16MHz
③④ 2.6Vp-p
IC601 ③④, ③⑤ REC/PB ③⑤ 2Vp-p
PB RF (VIDEO(2) Q162)
Q541 PB RF AMP
Q661 PB RF AMP
LPF
Q662,663 ENVELOPE DET
PB RF (SERVO)
IC607 (1/2) CLOG DET
IC607 (1/2) CUE/REV,SP/LP DET
Q665
Q664
IC601 SYSTEM CONTROL
MO4
MO3
MO2
MO1
MO0
MI5
MI4
MI3
MI2
MI1
MI0
T REEL FG
S REEL FG
HALL ON
X TAL
EX TAL
WAKE UP
CLOG
CUE/REV,SP/LP
LIM CONT
LD
UN LD
VDD
VPP
A VDD
A VREF
EVER 5V (IC602)
T/E LED ON
VIDEO CS
PAUSE LED
CAUTION LED
REC 1A
REC 2A
REC 1B
REC 2B
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE
FE ON
RP PB MODE
AUDIO STB
SYSTEM RESET
RESET
COSMO SCK
COSMO SO BUS
COSMO SI BUS
COSMO CS
BATT SENSE
VTR ON
CAM ON
TALLY LED
LINCS POWER
LIM ON
Q683,684 LIMITER
CURRENT DET
VG
FWD
REV
INSET
IN VP
N.C
P GND
CONTR
EDIT SW (W604(15))
ME/MP (CN602(12))
ME/MP
REC 1A
REC 2A
REC 1B
REC 2B
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE
FE ON
(VIDEO(2))
Q623
RP PB MODE
RP PB MODE (SERVO)
Q645
D605
SYSTEM RESET
IC603 RESET
EVER 5V
Q643(1/2)
Q644
Q611
D606
W604
CN802
SERIAL CONT
(See
VC-


IC605
LOADING MOTOR DRIVE
LIM ON
Q683,684
LIMITER
CURRENT DET
5V (Q682)
VG
CHARGE RUMP (OSC AND TIRIPLER)
VM
VC
FWD
REV
INSET
IN VP
P GND
N.C
CONTROLLER
PRE DRIVE (LEVEL SHIFTER)
"H" SWITCH
VP OUT
FSRD
RSFD
EVER 5V (IC602)
MECHA CHASSIS BLOCK (1/3)
CN607
W905
LM LOAD
LM UNLOAD
M903 LOADING MOTOR
(See Page 166)
FP-115 BOARD (1/4)
CN602
W902
TAPE LED(K)
D991 FOR TAPE TOP/END DETECT LED
(See Page 166)
FK-0 SWITCH BLOCK (1/3)
D904
D902 CAUTION
D901 DEW
D903 REC
E,Australian MODEL ONLY
CN603
Q619 LED DRIVE
VIDEO CS
COSMO SCK
COSMO SO
EDIT
ME/MP
(VIDEO(1))
EDIT SW (W604(15))
ME/MP (CN602(2))
Q624(1/2) LED DRIVE
Q624(1/2) LED DRIVE
Q622(1/2) LED DRIVE
Q622(1/2) LED DRIVE
ME/MP
REC 1A
REC 2A
REC 1B
REC 2B
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE
FE ON
(VIDEO(2))
Q623
RP PB MODE
RP PB MODE (SERVO)
Q243
CN203
SP/LP
AUDIO MUTE
CAM/LINE
VA PB MODE
AUDIO (AU-95)
IC205
EXPANTION PORT
A.STB
OE
SCK
SO
SP/LP
VA PB MODE
A MUTE
V MUTE
CAM/LINE
JOG/DEW LED
REC LED
POWER SAVE
SP/LP
VA PB MODE
V MUTE
CAM/LINE
JOG
POWER SAVE
VIDEO(1) BLOCK
Q645
SYSTEM RESET
IC603
RESET
EVER 5V
Q605
W604
DDS SO
DDS SCK
DDS SI
DIGITAL TITLE (VC-84)
COSMO CS
Q643(1/2)
Q643(1/2)
Q644
SYSTEM RESET
AUTO FOCUS (VC-84)
W605
BATT SENSE
VTR ON
CAM ON
POWER (DC-DC CONVERTER) (DD-30)
Q611(1/2)
Q611(1/2)
CN205
TALLY
EVF (VF-40)
(See Page 116)
VC-84 BOARD
(See Page 165)
CF-0 (1/2)
SWITCH BLOCK
(See Page 159)
EL-11 BOARD
D606
W604
SERIAL CONT
CN802
CN804
CN942
J902
REMOTE

3-11. SYSTEM CONTROL SECTION FUNCTION DESCRIPTION

The system control section consists of following four microcomputers:

- Mode/mechanism control microcomputer CXP80116
- DDS microcomputer μPD7503GF
- EVR microcomputer MC68HC05N4FU
- AF microcomputer MC68HC05C4

3-11-1. Mode/Mechanism Control Microcomputer CXP80116 (IC601 on VS-72 Board)

1. Function description

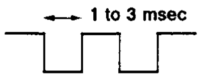
1) Power ON/OFF control
2) Key matrix read
   (Playback, Record, Fast-forward, Rewind, Pause, Stop, VIDEO/CAMERA Power, Eject, START/STOP)
3) Servo
4) Loading motor control
5) Error detection
   - Battery end/pre-end
   - Tape end
   - No cassette
   - Erasure prevention
   - DEW (condensation)
   - PAUSE release
   - CLOG (head clog)
   - L.MOTOR EMERGENCY
   - Drum rotation
   - Drum phase
   - Reel rotation
   - Capstan rotation
   - Drum/capstan start
6) H.M.S. counter
7) JOG VD insertion
8) Execution of various modes

2. Abbreviated specifications

- 8-bit high-speed, highly integrated single chip microcomputer
- A/D converter, 8-bit, 8-channel
- Serial interface
- Time/counter
- Time base timer
- Vector interrupts
- High precision timing pattern generation function (high-speed output)
- PWM/DA gate pulse output, 12-bit, 2-channel
- High precision measurement function (FRC) for servo signals
- Power on reset function
- Sleep and stop functions
- External memory expansion mode, microprocessor mode
- ROM: 16 Kbytes
- RAM: 352 Kbytes
- Speed: 500 ns
- Process: C MOS
- Operating voltage: 4.5 to 5.5V
- Package: 80-pin flat package

3. Terminal function (CXP80116)

<table>
<tr><th>Pin No.</th><th>Signal Name</th><th>I/O</th><th colspan="2">Function</th><th>Connection</th></tr>
<tr><td>1</td><td>SEL 2</td><td>O</td><td colspan="2" rowspan="2">ATF REF PILOT signal frequency (f1 to f4) selecting signal. (*1)<table><tr><td>ATF REF PILOT</td><td>f1</td><td>f2</td><td>f3</td><td>f4</td></tr><tr><td>SEL 1</td><td>H</td><td>L</td><td>H</td><td>L</td></tr><tr><td>SEL 2</td><td>H</td><td>H</td><td>L</td><td>L</td></tr></table></td><td rowspan="2">To ATF servo IC
(IC505: CXA1204Q)</td></tr>
<tr><td>2</td><td>SEL 1</td><td>O</td></tr>
<tr><td>3</td><td>PB 2B MUTE</td><td>O</td><td colspan="2" rowspan="4">Crosstalk prevention control signal from the other heads during playback.
Mute by “H”. (*1)</td><td rowspan="4">To REC/PB amp
(IC101, IC102)</td></tr>
<tr><td>4</td><td>PB 1B MUTE</td><td>O</td></tr>
<tr><td>5</td><td>PB 2A MUTE</td><td>O</td></tr>
<tr><td>6</td><td>PB 1A MUTE</td><td>O</td></tr>
<tr><td>7</td><td>$\overline{\text{REC 2B}}$</td><td>O</td><td colspan="2" rowspan="4">Drum head (1A, 2A, 1B, 2B) switching recording timing signal.
REC by “L”. (*1).</td><td rowspan="4">To REC/PB amp
(IC101, IC102)</td></tr>
<tr><td>8</td><td>$\overline{\text{REC 1B}}$</td><td>O</td></tr>
<tr><td>9</td><td>$\overline{\text{REC 2A}}$</td><td>O</td></tr>
<tr><td>10</td><td>$\overline{\text{REC 1A}}$</td><td>O</td></tr>
<tr><td>11</td><td>SYSTEM SYNC</td><td>O</td><td colspan="2">INT-V signal for drum servo. (*1)</td><td></td></tr>
<tr><td>12</td><td>CAM ON</td><td>O</td><td colspan="2">Camera DC/DC converter on/off signal. “H” when power of camera is turned on.</td><td>To DC/DC converter</td></tr>
<tr><td>13</td><td>VTR ON</td><td>O</td><td colspan="2">VTR DC/DC converter on/off signal. “H” when power of camera or video is turned on.</td><td>To DC/DC converter</td></tr>
<tr><td>14</td><td>SYSTEM RESET</td><td>O</td><td colspan="2">Reset AF microcomputer during Power ON, and input to video/audio extension port (IC205) to mute audio signal during Power ON.</td><td>Pin ⑨ of IC612 and Pin (60) of IC613 on VC-84 board, Pin ⑮ of IC205 on VS-72 board.</td></tr>
<tr><td>15</td><td>$\overline{\text{VIDEO CS}}$</td><td>O</td><td colspan="2">Selecting signal to video IC, CXA1200BQ and CXA1201Q of internal bus signal. Select by “L”.</td><td>Pin ㉑ of IC201
Pin ⑰ of IC203</td></tr>
<tr><td>16</td><td>$\overline{\text{AUDIO STB}}$</td><td>O</td><td colspan="2">Data strobe signal to video/audio extension port (IC205) of internal bus communication. Latch by _⌈.</td><td>Pin ① of IC205</td></tr>
<tr><td>17</td><td>CAP FWD/$\overline{\text{RVS}}$</td><td>O</td><td colspan="2">Capstan rotation direction control signal.
FWD by “H”, RVS by “L”. (*1)</td><td>Pin ⑳ of IC504</td></tr>
<tr><td>18</td><td>CAP ON</td><td>O</td><td colspan="2">Capstan driver ON control signal. Capstan ON by “H”. (*1)</td><td>Pin ⑬ of IC504</td></tr>
<tr><td>19</td><td>T/E LED ON</td><td>O</td><td colspan="2">TAPE top/end LED driving signal.</td><td>Q619Ⓑ</td></tr>
<tr><td>20</td><td>UNLOAD</td><td>O</td><td colspan="2" rowspan="2">Loading motor control signal<table><tr><td>Conditions / Signals</td><td>OFF</td><td>LOADING</td><td>UN-LOADING</td><td>BRAKE</td></tr><tr><td>LOAD</td><td>L</td><td>H</td><td>L</td><td>H</td></tr><tr><td>UNLOAD</td><td>L</td><td>L</td><td>H</td><td>H</td></tr></table></td><td>Pin ⑦ of IC605</td></tr>
<tr><td>21</td><td>LOAD</td><td>O</td><td>Pin ⑥ of IC605</td></tr>
<tr><td>22</td><td>MO4</td><td>O</td><td colspan="2" rowspan="5">Only Matrix output $\overline{\text{MO3}}$ is “L” active.
Only $\overline{\text{MO3}}$ is “L” pulse output, the other ports are “H” pulse output.</td><td rowspan="5"></td></tr>
<tr><td>23</td><td>$\overline{\text{MO3}}$</td><td>O</td></tr>
<tr><td>24</td><td>MO2</td><td>O</td></tr>
<tr><td>25</td><td>MO1</td><td>O</td></tr>
<tr><td>26</td><td>MO0</td><td>O</td></tr>
<tr><td>27</td><td>$\overline{\text{PAUSE LED}}$</td><td>O</td><td>PAUSE LED control signal. “L” when PAUSE LED is lit.</td><td rowspan="3">Middle withstand voltage (12V), Large current (12 mA) port.</td><td>Pin ② of Pause LED driver Q624</td></tr>
<tr><td>28</td><td>$\overline{\text{CAUTION LED}}$</td><td>O</td><td>CAUTION LED control signal. “L” when CAUTION LED is lit.</td><td>Pin ⑤ of Caution LED driver Q624</td></tr>
<tr><td>29</td><td>$\overline{\text{TALLY LED}}$</td><td>O</td><td>External TALLY LED and EVF internal TALLY drive. “L” when TALLY LED is lit.</td><td>TALLY LED</td></tr>
</table>

Pin No.	Signal Name	I/O	Function	Connection
30	$\overline{\text{HALL ON}}$	O	Reel FG hole element. Drive, middle withstand voltage and large current port. 	Reel sensor
31	MP	I	Microcomputer processor mode selecting pin → unselecting.	GND
32	$\overline{\text{RESET}}$	I	Reset input. "L" active.	Pin ③ of reset IC IC603
33	V_{SS}		GND	GND
34	XTAL	O	Crystal connecting pin for system clock oscillation. Oscillation at: 16 MHz.	Oscillation crystal X601
35	EXTAL	I		
36	$\overline{\text{COSMO CS}}$	I	Selecting signal from DDS microcomputer of internal bus communication to mode/mechanism control. Selected by "L".	DDS microcomputer Pin ⑭ of IC561 on VC-84 board
37	COSMO SI BUS	I	Serial data input pin.	
38	COSMO SO BUS	O	Serial data output pin.	
39	$\overline{\text{COSMO SCK}}$	I/O	Input/output pin for serial clock.	
40	MI 5	I	Matrix input.	
41	MI 4			
42	MI 3			
43	MI 2			
44	MI 1			
45	$\overline{\text{WAKE UP}}$	I	STBY release input. Released by "L".	
46	BATT SENSE	I	Battery end/pre-end voltage input. A/D input pin.	Inside BATT END ADJ (DD-30 board RV101)
47	N.C.			
48	SW POS ADJ	I	Switching position adjustment input (Test mode). A/D input pin	SW POS ADJ RV602
49	T REEL FG	I	T-reel/S-reel FG input. A/D input pin.	Pin ⑦ of IC604
50	S REEL FG	I		Pin ① of IC604
51	ATF ERROR	I	ATF error (ATF LOCK error)input. A/D input pin.	Pin ⑫ of ATF IC IC505
52	AV_{SS}		A/D converter GND pin.	GND
53	AV_{REF}	I	A/D converter reference voltage input pin	Pin ① of regulator IC IC602 for EVER 5V
54	AV_{DD}		A/D converter positive power supply pin	
55	DRUM PG	I	DRUM PG input. FRC (High precision timer)capture input pin.	Pin ⑨ of Sense amp IC502
56	MI 0	I	Matrix input	
57	CLOG	I	Clog detection signal input. Clog by "H".	Q665 ©
58	COMPOSITE SYNC	I	Composite sync signal input (Incorporated V SYNC separator)	Pin ⑭ of VIDEO IC IC201
59	CUE/REV SP/$\overline{\text{LP}}$	I	SP/LP discrimination signal input when CUE/REV, etc. "H" when SP mode, "L" when LP mode.	Q664 ©
60	DRUM PG	I	Not used.	Pin ⑨ of Sense amp IC502
61	DRUM FG	I	DRUM FG input pin. FRC capture input pin.	Pin ⑩ of Sense amp IC502
62	CAP FG	I	CAPSTAN FG input pin. FRC capture input pin.	Pin ⑫ of Sense amp IC502

Pin No.	**Signal Name**	**I/O**	**Function**	**Connection**
63	DRUM STEP	O	Not used.	
64	DRUM $\overline{\text{FWD}}$/RVS	O	DRUM rotation direction control signal. RVS by "H", FWD by "L".	Pin ③ of IC501
65	CAP ERH	O	H level output pin to set capstan error to maximum level when capstan start and stop.	Pin ⑫ of IC604
66	DRUM D/A	O	DA gate pulse output pin to output DRUM error. Exclusive servo output pin (DA mode).	
67	CAP PWM	O	PWM output pin servo exclusive output pin to output cap error (PWM mode)	
68	LIM CONT	O	Loading motor current limiter control signal so as to prevent fingers from being nipped. Limiter ON by "H".	
69	CAP FG	I	External event input pin to Cap FG input pin exclusive counter for Tape counter drive	Pin ⑫ of Sense amp IC502
70	$\overline{\text{LINCS POWER}}$	I	Input to release microcomputer standby to turn on the unit from external with remote commander.	Remote jack Pin ② of J902 on EL-11 board
71	$\overline{\text{NMI}}$	I	Non-maskable interrupt request pin. NMI is not used.	EVER 5V
72	V_{DD}		Positive power supply pin	EVER 5V
73	V_{SS}		GND pin.	GND
74	V_{PP}		N.C.	EVER 5V
75	DRUM ON	O	DRUM driver ON control signal.	Pin ⑦ of IC501
76	JOG VD	O	Insert to VIDEO signal when variable speed playback. Simulated VD output pin. (*1)	Pin ⑤ of IC201
77	RP PB MODE	O	Switching signals for REC/PB amplifier and REC/PB mode of ATF IC. (*1)	ATF IC Pin ㉕ of IC505 REC/PB amp (IC101, IC102)
78	$\overline{\text{FE ON}}$	O	Flying erase oscillation ON/OFF signal. Oscillating by "L". (*1)	Flying erase oscillation circuit
79	$\overline{\text{1/2 RF SWP}}$	O	1/2 RF SWP output pin. (*1)	REC/PB amp
80	RF SWP	O	RF SWP output pin. (*1)	REC/PB amp Video system

*1: High precision real time pattern output and high precision real time pulse output terminal

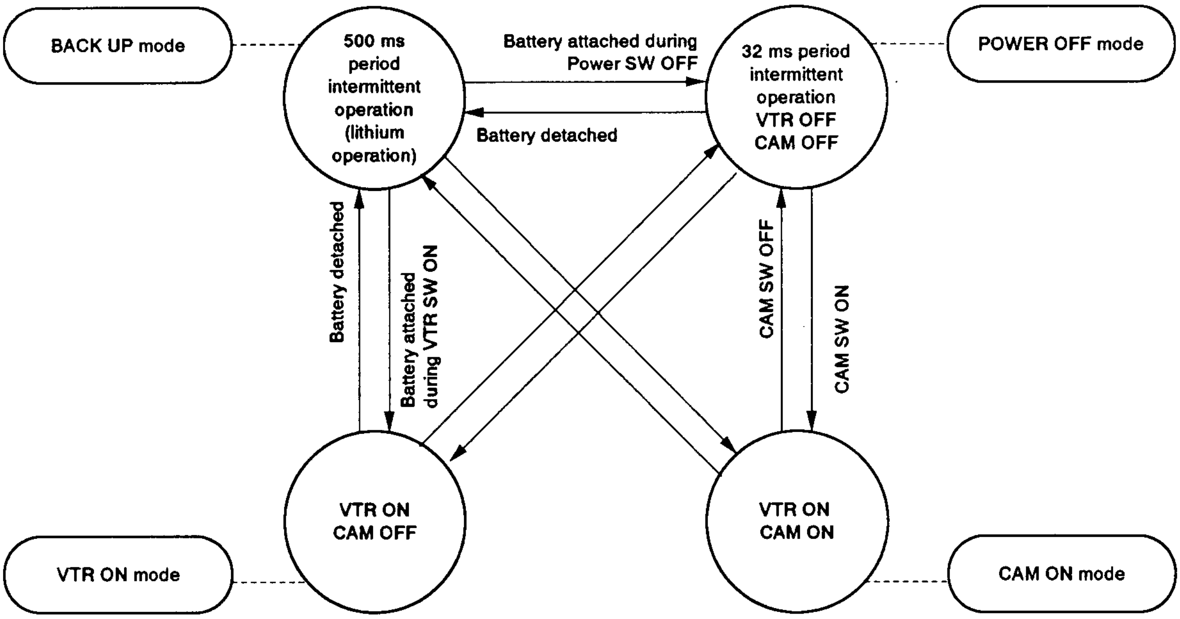
3-11-2. DDS microcomputer µPD7503GF (IC561 on VC-84 Board)

1. Function description

1) Internal data communication control
2) Date/time measurement
3) LCD indication (Not used)
4) Reading of key matrix
(Shutter speed, edit search +/–, focus, counter reset, superimpose on/off, memory, color/mode, backlight, date (+), time (next))

2. Operation modes

- As shown in the chart below, the operation mode is shifted according to the position of the power switch (CAMERA/OFF/PLAYER or VTR) and whether or not there is a main battery.


BACK UP mode
500 ms period intermittent operation (lithium operation)
Battery attached during Power SW OFF
Battery detached
32 ms period intermittent operation VTR OFF CAM OFF
POWER OFF mode
Battery detached
Battery attached during VTR SW ON
CAM SW OFF
CAM SW ON
VTR ON CAM OFF
VTR ON CAM ON
VTR ON mode
CAM ON mode

• The main DDS microcomputer functions in each mode is as follows.

Mode	Main Battery	Power Switch	Microcomputer power supply	Clock Mode	EVF Indication	Main Functions
BACK UP	No	CAMERA/ OFF/ PLAYER (or VTR)	LI 3V (Lithium battery)	500 ms period intermittent oscillation	–	• Backup of title and tape counter data • Clock count operation
POWER OFF	Yes	OFF	EVER 5V (Main battery)	32 ms period intermittent oscillation	–	
VTR ON	Yes	PLAYER (or VTR)	EVER 5V + SS 5V (Main battery)	Continuous oscillation	–	• Serial communication with EVR and mode/mechanism control microcomputer • Date/time set function • Acceptance of counter reset keys
CAM ON	Yes	CAMERA	EVER 5V + SS 5V (Main battery)	Continuous oscillation	○	• VTR ON functions and all camera features • Indication control for white balance, focus, titles, electronics shutter, etc. • Indication to EVF

3. Terminal function and input/output level (μPD7503GF)

Pin No.	Signal Name	I/O	Functions and I/O Level
1	——	–	
2	$\overline{\text{CMO 2}}$	O	Key matrix output signal. "L" pulse of 22 ms (VTR mode) or 1V period (camera mode).
3	$\overline{\text{CMO 1}}$	O	
4	$\overline{\text{CMO 0}}$	O	
5	DDS SI	I	Serial communication and data input. V period "L" pulse train.
6	DDS SO	O	Serial communication and data output. V period "H" pulse train.
7	$\overline{\text{DDS SCK}}$	I/O	Serial communication and serial clock input/output. V period "L" pulse train.
8	$\overline{\text{TEST}}$	I	Test mode input. Normally "H".
9	$\overline{\text{LI PE}}$	I	Lithium battery pre-end detection. Normally "H". "L" when lithium battery voltage drops.
10	VTR PWR	I	SS 5V power detection. "H" when power on.
11	CG BUSY	I	Busy signal input from character generator. Not used.
12	CMO 4	O	Key matrix output signal. "H" pulse of 22 ms (VTR mode) or 1V period (camera mode).
13	$\overline{\text{EVR CS}}$	O	Chip select signal to EVR microcomputer (IC361 on VC-84 board). "L" pulse of 1V period.
14	$\overline{\text{COSMO CS}}$	O	Chip select signal to servo/system control microcomputer (IC601 on VS-72 board). "L" pulse of 1V period.
15	CG STB	O	Strobe signal for character generator. 1V period "H" pulse train.
16	TG CS	O	Not used.
17	SRAM CS	O	Chip select signal to static RAM (IC801 on TI-31 board). VTR mode: "L" Camera mode: Normally "L". "H" during title operation.
18	TITLE CS	O	Chip select signal to title controller (IC802 on TI-31 board). VTR mode: "L" Camera mode: "H" pulse of 1V period.
19	LCD OFF	O	LCD indication ON/OFF control output. Normally "L" (0V). "H" (3V) when backed up by lithium battery. Not used.
20	X2	O	Crystal oscillation circuit for clock. Oscillation frequency is 32.768 kHz
21	X1	I	
23	VLC 3	I	LCD power supply 3 input pin. Normally 0V. 3V when backed up. Not used.
24	VLC 2	I	LCD power supply 2 input pin. Normally 1.7V. 3V when backed up. Not used.
25	VLC 1	I	LCD power supply 1 input pin. Normally 3.3V. 3V when backed up. Not used.
26	VDD	I	Power supply input pin.
27	COM 3	O	LCD remote control pin driving output 3. 4 values outputs of 0, 1.7, 3.3, 5V. Not used.
28	COM 2	O	LCD remote control pin driving output 2. Not used.
29	COM 1	O	LCD remote control pin driving output 1. Not used.
30	COM 0	O	LCD remote control pin driving output 0. Not used.

Pin No.	Signal Name	I/O	Functions and I/O Level
31		I	
32 | 40	——	I	Not used
41 | 54	S13 | S0	O	LCD segment pin driving output, 13 to 0. 4 values outputs of 0, 1.7, 3.3, 5V. Not used.
55	INT 1	I	Interrupt input by camera VD. VTR mode: "H". Camera mode: "H" pulse of 1V period.
56	RESET	I	Normally "L".
57	CL 1	I	System clock oscillation pin. • When video power ON or camera power ON: Continuous oscillation (Oscillation frequency: approx. 330 kHz). • When power OFF: 32 ms period intermittent oscillation (Oscillation frequency: approx. 330 kHz) • When backed up by lithium battery: 500 ms period intermittent oscillation (Oscillation frequency: approx. 70 kHz)
59	CL 2	I	
58	VDD	O	Power supply input pin.
60	CMI 3	I	Key matrix input signal. Normally "H". When key input, "L" pulse of 22 ms (VTR mode) or 1V period (camera mode).
61	CMI 2	I	
62	CMI 1	I	
63	CMI 0	I	
64	$\overline{\text{COM 3}}$	I	Key matrix input signal. Normally "H". When key input, "L" pulse of 22 ms (VTR mode) or 1V period (camera mode).

3-11-3. EVR microcomputer MC68HC05N4 (IC361 on VC-84 Board)

1. Function description

1) EVR control
2) Auto white balance control
3) Electronic shutter

2. Pin function and input/output level (MC68HC05N4)

Pin No.	Signal Name	I/O	Functions and I/O Level
1	———		———
2	$\overline{\text{SSW}}$	O	"H" only during communicating with serial switching D/A converter. "H" pulse of V period.
3	$\overline{\text{SCLK}}$	O	Serial clock output. V period "L" pulse train.
4	SI	I	Serial data input. V period "H" pulse train.
5	SO	O	Serial data output. V period "L" pulse train.
6	$\overline{\text{EVR CS}}$	I	Communication request from DDS. "L" pulse of V period.
7	L IN	I	LANC input. L: 0, H: 1. V period "H" pulse train.
8	L OUT	O	LANC output. L: 0, H: 1. V period "H" pulse train.
9	$\overline{\text{CAM ADJ}}$	I	NORMAL/ADJUST selection. Normally "H". "L" during adjustment.
10		O	
11	SSW	O	Serial signal switching. "L" pulse of V period.
12, 13	LD	O	Data load instruction to EVR (IC252, IC302). "H" pulse of V period.
14	$\overline{\text{BACK LIGHT}}$	O	"L" during backlight compensation ON.
15	IRIS I/O	I	Control from AF microcomputer, Indoor (IN): H, outdoor (OUT): L according to brightness.
16	———		
17	VDD		Connected to EVER 5V.
18			GND
19	———	–	
20	PAL/$\overline{\text{NTSC}}$	I	Broadcast system selection. L: NTSC, H: PAL.
21	TG STB		Strobe signal to TIMING GENERATOR. "L" pulse of V period.
22	GND		———
23	GND		———
24, 25	GND		———
26	GND	–	———
27	GND	–	———
28	CAM 5V	I	Camera power on monitoring. L: CAM OFF, H: CAM ON.
29	AW IN	I	AWB A/D timer stop. Pattern drive interrupt. Normally 2V period pulse.
30	AW ADJ	O	AWB preset data fetch. Normally "L". "H" during auto white balance adjustment.
31	———	–	NC
32	———	–	———
33	———	–	———
34	S3SW	O	AWB measurement signal selection. "H" pulse of 3V period.
35	S2SW	O	AWB measurement signal selection. "H" pulse of 3V period.
36	DISCHG	O	Capacitor reset pulse for timer measurement lamp voltage generation. "H" pulse of V period.
37	———	–	———
38	S1SW	O	AWB measurement signal selection. "H" pulse of 3V period.
39	———	–	———
40	OSC2	O	Built-in inverter output for oscillation. Oscillation frequency: 4 MHz.
41	OSC1	I	Built-in inverter input for oscillation.
42	VDD		Connected to EVER 5V.
43	———		———
44	$\overline{\text{RESET}}$		Normally "H". "L" when reset.
45	$\overline{\text{IRQ}}$		Connected to $\overline{\text{EVR CS}}$ signal. "L" pulse of V period.
46	———	–	Normally "H". "L" when reset.
47	———	–	Normally "H". "L" when reset.
48	$\overline{\text{A/D EN}}$	O	1-bit A/D converter operation ON/OFF output for titler. Normally "H". "L" for 7V period when title store button is (S762 on CF-0 board) pressed.

3-11-4. AF microcomputer MC68HC05C4 (IC613 on VC-84 Board)

1. Function description

1) AF control
2) Power focus
3) Zoom motor drive

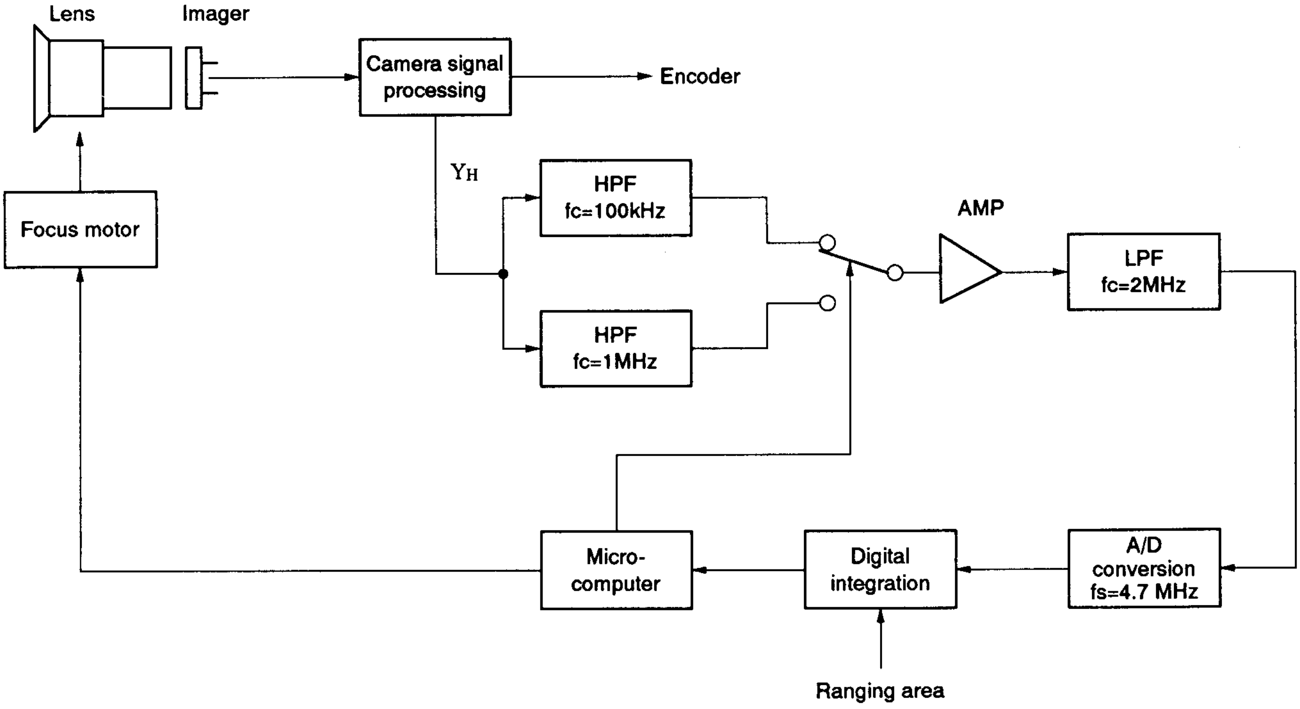
2. Auto focus system of this unit
(Λ -AF: Image processing system)

The high frequency components of video signal (actually luminance signal) are microcomputer processed by TTL without using external sensors to control the focus).

3. Outline of operation

The frequency components from 100k to 2 MHz and from 1M to 2 MHz are extracted from the luminance (Y) signal, and these are digitally integrated for each field. This integration value is called the evaluation value. This evaluation value becomes the information for auto focusing, and focus ring is controlled by finding the peaks in the evaluation values based on the concepts that:

Picture is in focus → edges of image become clearer → high frequency components of image increase → evaluation value increases


Lens
Imager
Camera signal processing
Encoder
Focus motor
YH
HPF fc=100kHz
HPF fc=1MHz
AMP
LPF fc=2MHz
A/D conversion fs=4.7 MHz
Digital integration
Micro-computer
Ranging area

4. Pin function and input/output level (MC68HC05C4)

Pin No.	Signal Name	I/O	Functions and I/O Level
1	$\overline{\text{SS}}$ OUT	O	EVR data read timing output (PD5 SS input). V period "L" pulse train.
2	IRIS I/O	O	Indoors/outdoors determination according to aperture value. "H" for indoors and "L" for outdoors.
3	LED CONT	O	Focus position detect LED drive signal. V period "H" pulse.
4			
5			
6	$\overline{\text{MACRO}}$	O	Signal to DDS microcomputer (IC561 on VC-84 board). "L" when zoom ring is at MACRO position.
7	———	–	
8			Not used.
9	———	–	
10	———	–	
11	$\overline{\text{ZOOM T}}$	O	Normally "H". "L" when zoom motor is rotated in telephoto direction.
12	$\overline{\text{ZOOM W}}$	O	Normally "H". "L" when zoom motor is rotated in wide angle direction.
13	Focus N	O	Normally "L". "H" when focus motor is rotated in far range direction.
14	———	–	
15	Focus F	O	Normally "L". "H" when focus motor is rotated in close range direction.
16	F SPD ϕ	O	Not used.
17	———	–	
18	F SPD1	O	Not used.
19	F SPD2	O	Not used.
20	———	–	
21	F SPD3	O	Not used.
22	———	–	
23	Vss	–	Connected to GND.
24	Vss	–	Connected to GND.
25	———	–	
26	$\overline{\text{F SENS 1}}$	I	Focus position detection signal. V period "H" pulse when focus ring is between about 1.3m and 3m.
27	———	–	
28	WINDOW	O	Auto focus window signal. V period "H" pulse.
29	———	–	
30	$\overline{\text{F SENS 2}}$	I	Focus position detection signal. V period "H" pulse when focus ring is between about 2m and ∞ .
31	AF SSW	O	Timing output for bus selection. "H" pulse of V period.
32	———	–	
33	DA STB	O	D/A converter for AF. For data latch. V period "H" pulse train.
34	PAL/$\overline{\text{NTSC}}$	I	PAL/NTSC selection.
35	———	–	
36	$\overline{\text{J STB}}$	O	External display jig. For data latch. "L" pulse of V period.
37	XCS	O	Active "L" for communication request to IC612 CXD-1204. "L" pulse of V period.
38	PD0	I	Connected to VDD.
39	———	–	
40	PD1	I	Connected to VDD.
41	MISO	I/O	SPI MASTER: in...SLAVE: out...V period "H" pulse train.
42	MOSI	I/O	SPI MASTER: out...SLAVE: in...V period "L" pulse train.
43	$\overline{\text{SCK}}$	I/O	SPI SERIAL CLOCK. V period "L" pulse train.
44	———	–	

Pin No.	Signal Name	I/O	Functions and I/O Level
45	$\overline{\text{SS}}$	I	V period “L” pulse train.
46	———	–	
47	———	–	
48	$\overline{\text{EVR CS}}$	I	EVR data communication request ↓ from DDS microcomputer. “L” pulse of V period.
49	———	–	
50	———	–	
51	$\overline{\text{Focus FG}}$	I	Interrupt generation by Focus motor FG ↓ . “L” when auto focus OFF. “H” pulse of period according to focus motor rotation speed when auto focus ON.
52	CLK OUT	O	Waveform shaped output of Pin (54) clock (1.77 MHz)
53	———	–	
54	CLK IN	I	External clock input. 14.2 MHz clock input to Pin ㉘ of IC612 is divided by 8 input.
55	VDD		CAM 5V
56	———	–	
57	———	–	
58	———	–	
59	———	–	
60	$\overline{\text{SYS RST}}$	I	Normally “H”. “L” when resetting.
61	AREA	I	Interrupt generation by ↓ from CXD-1204 (IC612). V period pulse
62	VPP		CAM 5V
63	———	–	Not used.
64	———	–	

3-12. INTERFACE

3-12-1. System Control — Video Audio Block Interface

Signal Name	I/O	Pin No.	VTR Mode													CAMERA Mode					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB• PAUSE	FRAME	SLOW	*13 REC	*13 REC PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW								FWD	RVS	FWD	RVS
SP/LP	O	Pin ⑭ of IC205 on VS-72 board	1	H	H	*2	*2	*2	*2	*2	*1	*1	*1	*14	*14	*14	*14	*2	*2	H	H
VA PB MODE	O	Pin ⑬ of IC205 on VS-72 board	L	L	L	H	H	H	H	H	H	H	H	L	L	L	L	H	H	H	H
AUDIO MUTE	O	Pin ⑫ of IC205 on VS-72 board	L	L	L	H	H	L*3	H	H	H	H	H	L	L	L	L	H	H	L	H
VIDEO MUTE	O	Pin ⑪ of IC205 on VS-72 board	L	L	L	L	L	L*3	L	L	L	L	L	L	L	L	L	L	L	L	L
CAM/LINE	O	Pin ⑦ of IC205 on VS-72 board	L	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H
JOG/DEW LED	O	Pin ⑥ of IC205 on VS-72 board	L*4	L	L	H	H	L	H	H	H	H	H	L	L	L	L	L	H	L	H
REC LED	O	Pin ⑤ of IC205 on VS-72 board	H	H	H	H	H	H	H	H	H	H	H	L	L	H	H	H	H	H	H
POWER SAVE	O	Pin ④ of IC205 on VS-72 board	H	H	H	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L	L
JOG VD	O	Pin (76) of IC601 on VS-72 board	L	L	L	*5	*5	H	*5	*5	*5	*5	*5	L	L	L	L	L	*5	L	*5
RP PB MODE	O	Pin (77) of IC601 on VS-72 board	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
FE ON	O	Pin (78) of IC601 on VS-72 board	H	H	H	H	H	H	H	H	H	H	H	L	H	H	L	H	H	H	H
1/2 RF SWP	O	Pin (79) of IC601 on VS-72 board	H/L	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
RF SWP	O	Pin (80) of IC601 on VS-72 board	H/L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
PB 2B MUTE	O	Pin ③ of IC601 on VS-72 board	H/L	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8	L	L	L	L	*8	*8	*8	*8
PB 1B MUTE	O	Pin ④ of IC601 on VS-72 board																			
PB 2A MUTE	O	Pin ⑤ of IC601 on VS-72 board																			
PB 1A MUTE	O	Pin ⑥ of IC601 on VS-72 board																			

Signal Name	I/O	Pin No.			
			STOP	FF	RE
REC2B	O	Pin ⑦ of IC601 on VS-72 board	H/L	H	H
REC1B	O	Pin ⑧ of IC601 on VS-72 board			
REC2A	O	Pin ⑨ of IC601 on VS-72 board			
REC1A	O	Pin ⑩ of IC601 on VS-72 board			
VIDEO CS	O	Pin ⑮ of IC601 on VS-72 board			
AUDIO STB	O	Pin ⑯ of IC601 on VS-72 board			
COSMO SO	O	Pin ㊳ of IC601 on VS-72 board			
COSMO SCK	I/O	Pin ㊴ of IC601 on VS-72 board			
CUE/REV SP/LP	I	Pin (59) of IC601 on VS-72 board	H	*10	*1
CLOG	I	Pin (57) of IC601 on VS-72 board	H	*11	*1
COMPOSITE SYNC	I	Pin (58) of IC601 on VS-72 board	*12	*12	*1

*1. Outputs the determination result of last mode. SP mode "H", LP

*2. Outputs the determination result of recording mode of playback
SP mode "H", LP mode "L".

*3. "H" at non signal portion of tape

*4. "H" after mode shift completion during dew condensation gener

*5. Simulated VD signal

*6. 12.5 Hz duty 50% pulse (synchronized to drum rotation)

*7. 25 Hz duty 50% pulse (synchronized to drum rotation)

Pin No.	VTR Mode													CAMERA Mode					
	STOP	FF	REW	FR SEARCH		PB	PICTURE SERACH		PB• PAUSE	FRAME	SLOW	*13 REC	*13 REC PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
				CUE	REVIEW		CUE	REVIEW								FWD	RVS	FWD	RVS
in ⑦ of IC601 n VS-72 board	H/L	H	H	H	H	H	H	H	H	H	H	*9	H	H	*9	H	H	H	H
in ⑧ of IC601 n VS-72 board																			
in ⑨ of IC601 n VS-72 board																			
in ⑩ of IC601 n VS-72 board																			
in ⑮ of IC601 n VS-72 board	"L" pulse of V period.																		
in ⑯ of IC601 n VS-72 board																			
in ㊳ of IC601 n VS-72 board	V period pulse train.																		
in ㊴ of IC601 n VS-72 board																			
in (59) of IC601 n VS-72 board	H	*10	*10	*10	*10	L	*10	*10	*10			H	H/L	H/L	H	L	*10	L	*10
in (57) of IC601 n VS-72 board	H	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	*11	H			H	*11	*11	*11
in (58) of IC601 n VS-72 board	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12

tion result of last mode. SP mode "H", LP mode "L".

tion result of recording mode of playback tape.

le "L".

ion of tape

ompletion during dew condensation generation.

se (synchronized to drum rotation)

(synchronized to drum rotation)

*8. See timing chart 6.

*9. See timing chart 7.

*10. "H" at SP recording portion of tape, "L" at LP recording portion.

*11. "H" at non recording portion of tape, or drop-out portion. Head clog detection input.

*12. Composite sync signal input (polarity=+) separated from line input video signal, camera video signal, or playback video signal.

*13. Effectively for the model installed REC switch.

*14. According to the REC MODE switch position.
"H" when the SP position, "L" when the LP position.

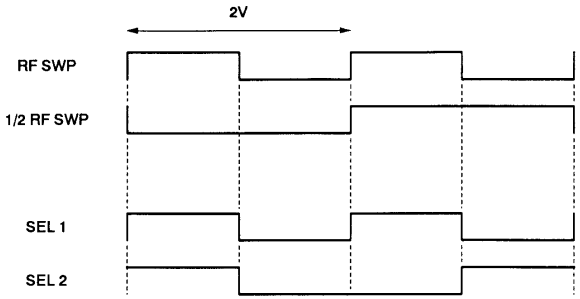
3-12-2. System Control — Servo Block Interface

Signal Name	I/O	Pin No.	VTR Mode													CAMERA Mode					
			STOP	FF	REW	FR SEARCH		PB	PICTURE SEARCH		PB• PAUSE	FRAME	SLOW	*19 REC	*19 REC PAUSE	STAND BY	REC	EDIT SEARCH		REC REVIEW	
						CUE	REVIEW		CUE	REVIEW								FWD	RVS	FWD	RVS
T.REEL FG	I	Pin ㊾ of IC601 on VS-72 board	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
S.REEL FG	I	Pin ㊿ of IC601 on VS-72 board	–	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	–	–	*1	*1	*1	*1	*1
ATF ERROR	I	Pin (51) of IC601 on VS-72 board	–	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
DRUM PG	I	Pins (55) and (60) of IC601 on VS-72 board	–	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3	*3
DRUM FG	I	Pin (61) of IC601 on VS-72 board	–	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
CAP FG	I	Pins (62) and (69) of IC601 on VS-72 board	–	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
CAP ON	O	Pin ⑱ of IC601 on VS-72 board	L	H	H	H	H	H	H	H	L	*15	*15	H	L	L	H	H	H	H	H
SEL 2	O	Pin ① of IC601 on VS-72 board	H	*6	*6	*7	*7	*8	*7	*7	L	*9	*10	*6	H	H	*6	*8	*11	*8	*11
SEL 1	O	Pin ② of IC601 on VS-72 board	L	*6	*6	*7	*7	*8	*7	*7	L	*9	*10	*6	L	L	*6	*8	*11	*8	*11
DRUM STEP *12	O	Pin (63) of IC601 on VS-72 board	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM FWD/RVS *13	O	Pin (64) of IC601 on VS-72 board	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
CAP ERH *14	O	Pin (65) of IC601 on VS-72 board	–	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	*15	*15	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ	HIZ
DRUM D/A	O	Pin (66) of IC601 on VS-72 board	–	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16
CAP PWM	O	Pin (67) of IC601 on VS-72 board	–	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17	*17
LIM CONT *18	O	Pin (68) of IC601 on VS-72 board	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
DRUM ON	O	Pin (75) of IC601 on VS-72 board	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H

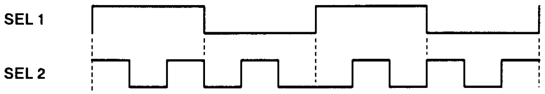
*1. Pulse is input by reel rotation.
*2. ATF error voltage input.
*3. 1 PG pulse is input with 1 rotation of drum. Approx. 37.5 Hz.
*4. 6 FG pulses are input with 1 rotation of drum. Approx. 225 Hz.
*5. 360 FG pulses are input with 1 rotation of capstan. Approx. 1145.5 Hz during REC/PB (SP).
*6. See timing chart 1.
*7. See timing chart 2.
*8. See timing chart 3.
*9. See timing chart 5.
*10. See timing chart 5.
*11. See timing chart 4.
*12. Not used.
*13. Normally "L". "H" temporarily only when loading/unloading (Drum inverts.)
*14. Normally HIZ (High impedance). "H" during start and stop of capstan
*15. "H" pulse when tape is advanced.
*16. "H" pulse/"L" pulse output as center level HIZ (2.5 Vdc).
*17. 64 μsec sync PWM signal
*18 "H" when cassette loading.
*19 Effectively for the model installed REC switch.

3-12-3. Timing Chart

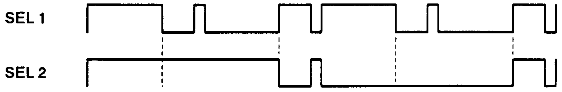
Timing chart 1
FF, REW, REC


2V
RF SWP
1/2 RF SWP
SEL 1
SEL 2

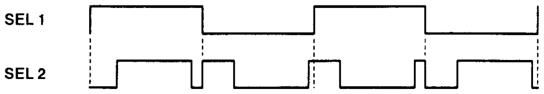
Timing chart 2
FR-SEARCH(CUE/REV)
PICTURE-SEARCH(CUE/REV)



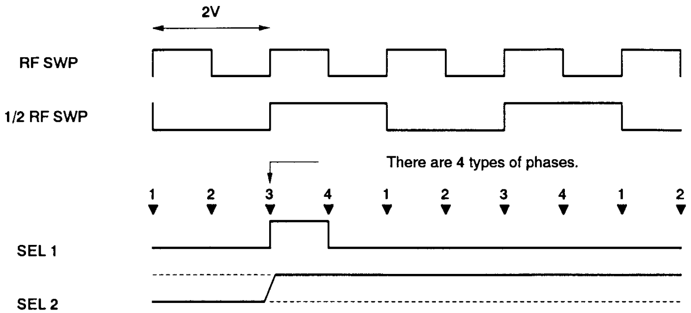
Timing chart 3
PB, EDIT-SEARCH(FWD)
REC-REVIEW(FWD)



Timing chart 4
EDIT-SEARCH(RVS)
REC-REVIEW(RVS)

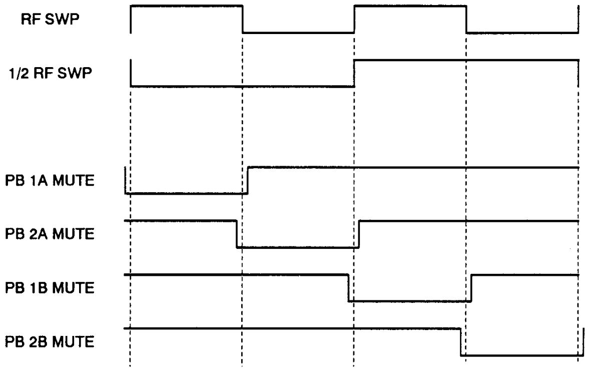


Timing chart 5
FRAME, SLOW

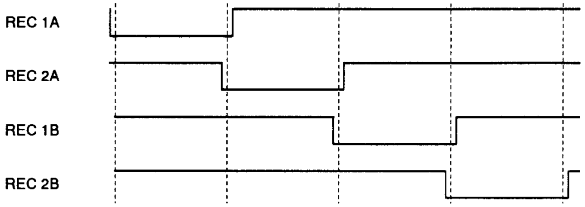

2V
RF SWP
1/2 RF SWP
There are 4 types of phases.
1
2
3
4
1
2
3
4
1
2
SEL 1
SEL 2

- 1 pulse generates every frame advancing is pressed in FRAME.
- 1 pulse generates 1 time in 10V in SLOW.

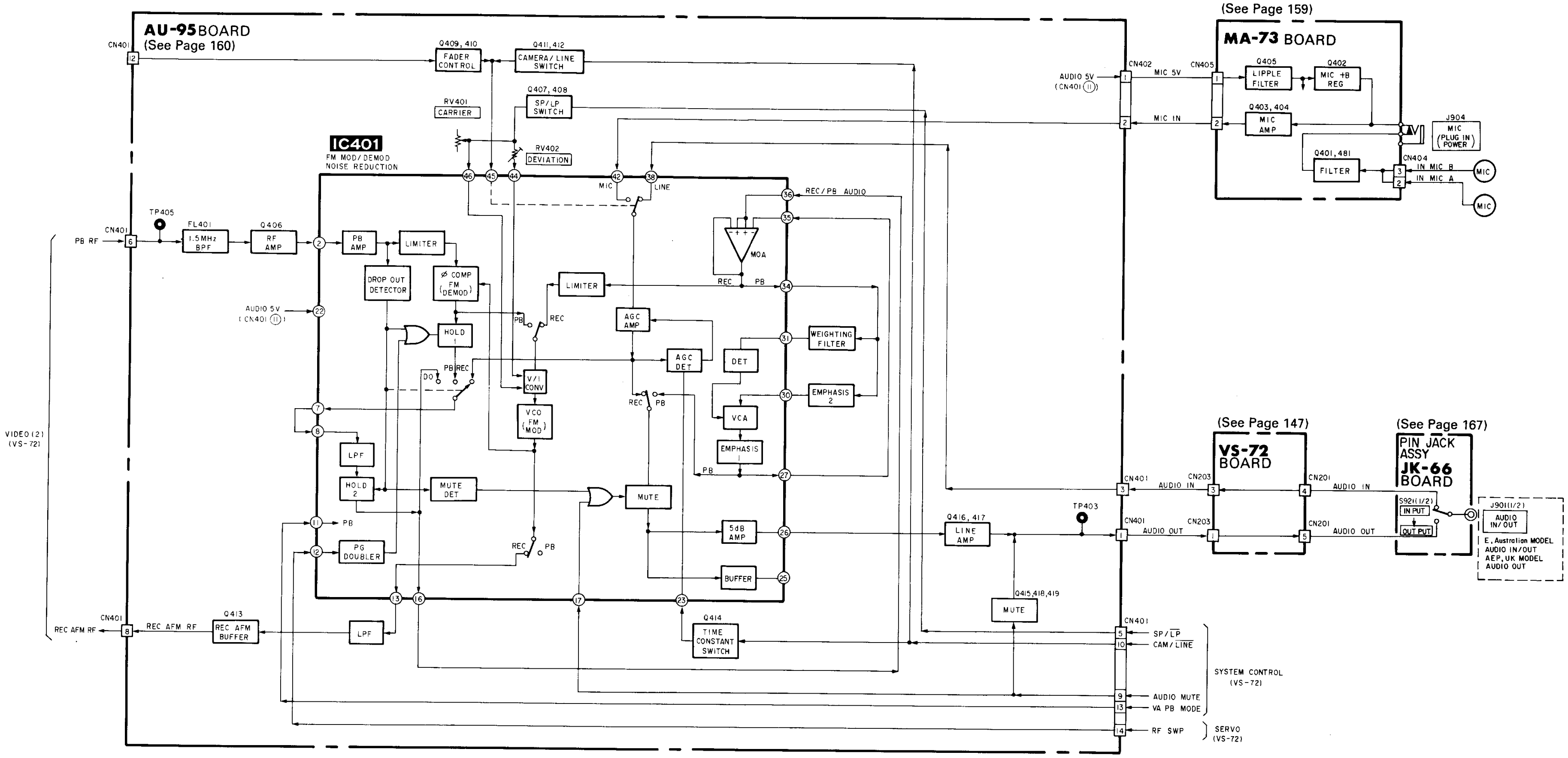
Timing chart 6


RF SWP
1/2 RF SWP
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE

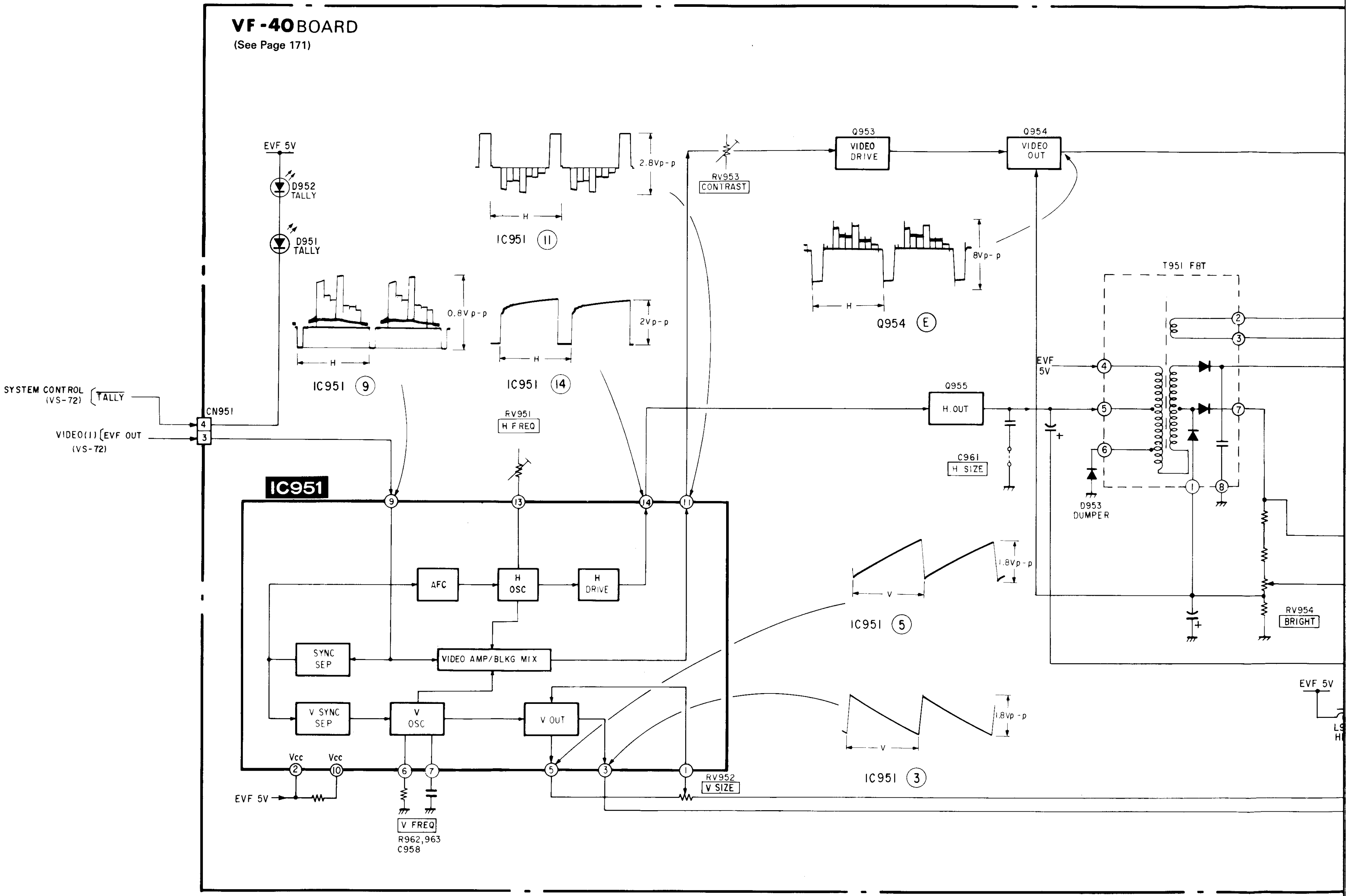
Timing chart 7

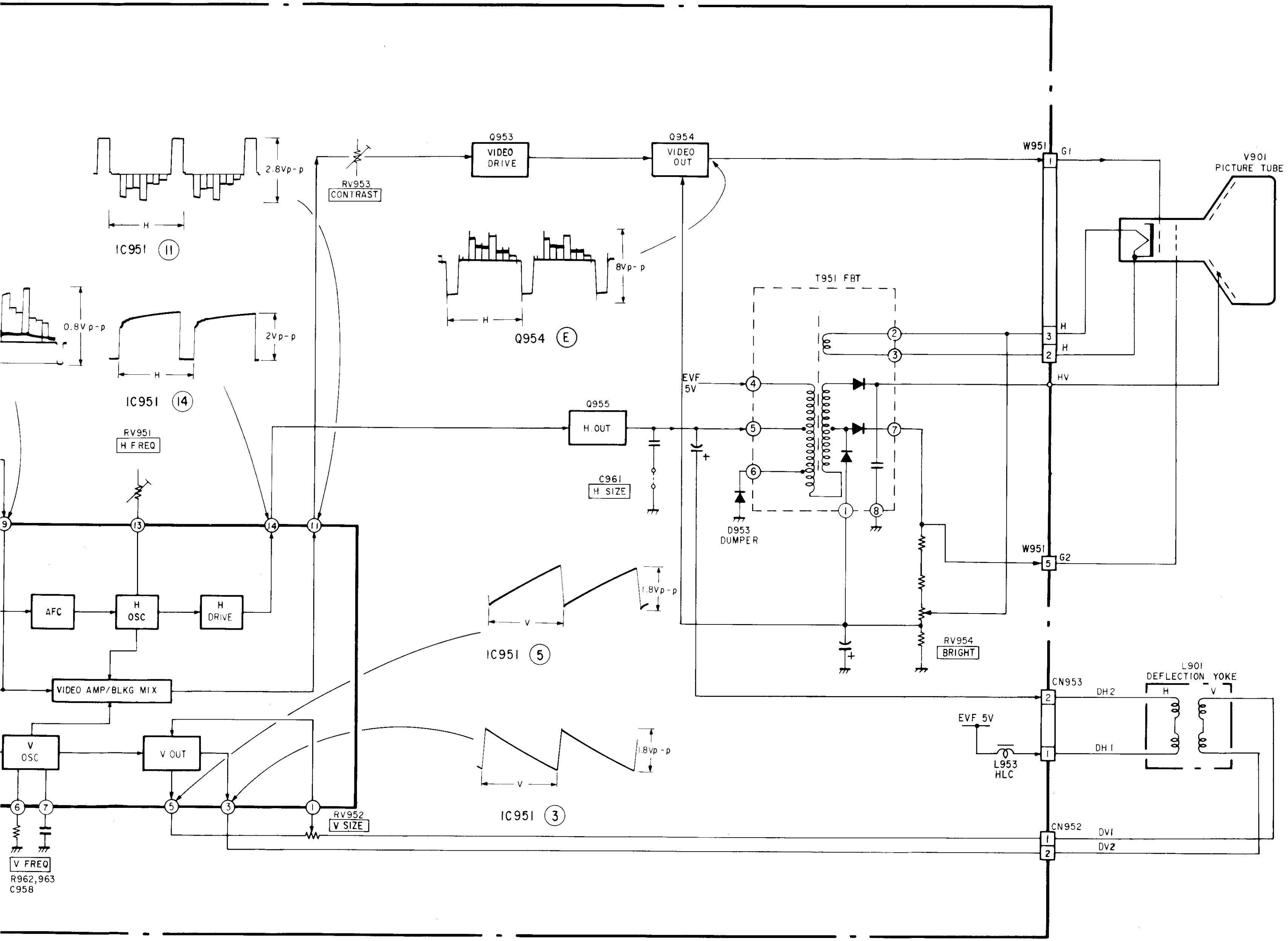

REC 1A
REC 2A
REC 1B
REC 2B

3-13. AUDIO BLOCK DIAGRAM


AU-95 BOARD
(See Page 160)
CN401
Q409, 410
FADER CONTROL
Q411, 412
CAMERA/LINE SWITCH
Q407, 408
SP/LP SWITCH
RV401
CARRIER
RV402
DEVIATION
IC401
FM MOD/DEMOD
NOISE REDUCTION
MIC
LINE
REC/PB AUDIO
MOA
TP405
PB RF
FL401
1.5MHz BPF
Q406
RF AMP
PB AMP
LIMITER
DROP OUT DETECTOR
ϕ COMP FM (DEMOD)
AUDIO 5V
(CN401 ⑪)
HOLD 1
PB
REC
DO
V/I CONV
VCO (FM MOD)
LIMITER
AGC AMP
AGC DET
DET
WEIGHTING FILTER
EMPHASIS 2
VCA
EMPHASIS 1
VIDEO (2)
(VS-72)
LPF
HOLD 2
MUTE DET
MUTE
5dB AMP
BUFFER
PG DOUBLER
REC AFM RF
Q413
REC AFM BUFFER
LPF
Q414
TIME CONSTANT SWITCH
Q416, 417
LINE AMP
TP403
Q415,418,419
MUTE
CN402
MIC 5V
MIC IN
SP/LP
CAM/LINE
SYSTEM CONTROL
(VS-72)
AUDIO MUTE
VA PB MODE
RF SWP
SERVO
(VS-72)
(See Page 159)
MA-73 BOARD
CN405
Q405
LIPPLE FILTER
Q402
MIC +B REG
Q403, 404
MIC AMP
Q401, 481
FILTER
CN404
IN MIC B
IN MIC A
MIC
MIC
J904
MIC (PLUG IN POWER)
(See Page 147)
VS-72 BOARD
CN203
AUDIO IN
AUDIO OUT
CN201
(See Page 167)
PIN JACK ASSY
JK-66 BOARD
S921(1/2)
IN PUT
OUT PUT
J901(1/2)
AUDIO IN/OUT
E, Australian MODEL
AUDIO IN/OUT
AEP, UK MODEL
AUDIO OUT

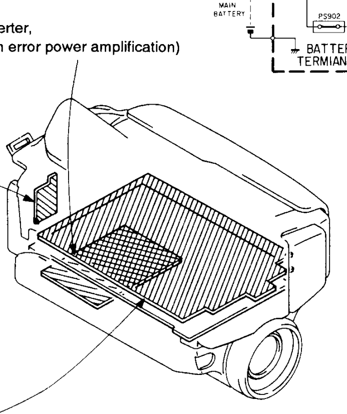
3-14. VIEW FINDER BLOCK DIAGRAM

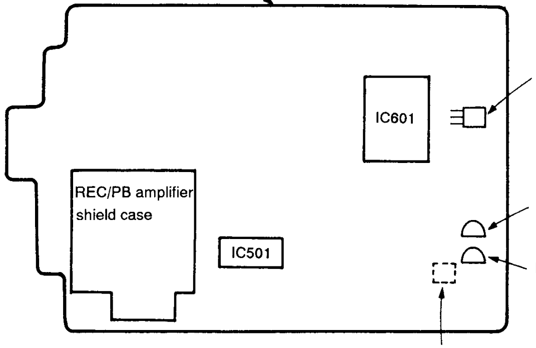

VF-40 BOARD
(See Page 171)
SYSTEM CONTROL (VS-72) TALLY
VIDEO(1) EVF OUT (VS-72)
CN951
EVF 5V
D952 TALLY
D951 TALLY
IC951 ⑨
0.8Vp-p
H
IC951 ⑪
2.8Vp-p
IC951 ⑭
2Vp-p
RV951 H FREQ
RV953 CONTRAST
Q953 VIDEO DRIVE
Q954 VIDEO OUT
Q954 Ⓔ
8Vp-p
T951 FBT
EVF 5V
Q955 H.OUT
C961 H SIZE
D953 DUMPER
RV954 BRIGHT
IC951
AFC
H OSC
H DRIVE
SYNC SEP
VIDEO AMP/BLKG MIX
V SYNC SEP
V OSC
V OUT
Vcc
EVF 5V
V FREQ
R962,963
C958
RV952 V SIZE
IC951 ⑤
1.8Vp-p
V
IC951 ③
1.8Vp-p
EVF 5V

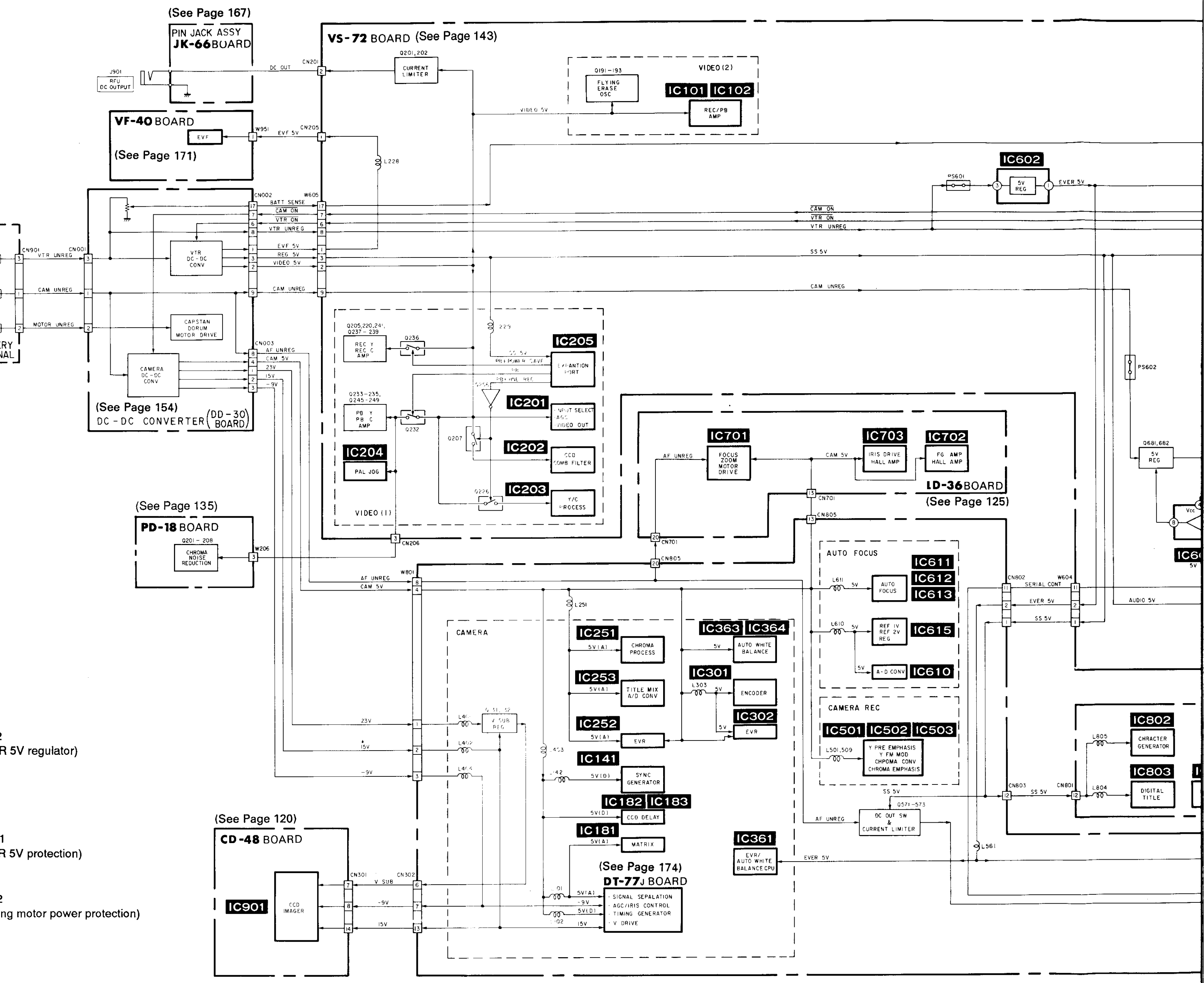

2.8Vp-p
H
IC951 ⑪
RV953
CONTRAST
Q953
VIDEO DRIVE
Q954
VIDEO OUT
8Vp-p
H
Q954 Ⓔ
0.8Vp-p
2Vp-p
H
IC951 ⑭
RV951
H FREQ
Q955
H OUT
C961
H SIZE
EVF 5V
T951 FBT
D953
DUMPER
W951
G1
V901
PICTURE TUBE
H
H
HV
W951
G2
RV954
BRIGHT
9
13
14
11
AFC
H OSC
H DRIVE
VIDEO AMP/BLKG MIX
1.8Vp-p
V
IC951 ⑤
V OSC
V OUT
1.8Vp-p
V
IC951 ③
6
7
5
3
1
RV952
V SIZE
V FREQ
R962,963
C958
CN953
DH2
DH1
EVF 5V
L953
HLC
L901
DEFLECTION YOKE
H
V
CN952
DV1
DV2

3-15. POWER BLOCK DIAGRAM

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]


DD-30 board
(DC-DC converter,
drum/capstan error power amplification)
Battery terminal
Fuse are housed.
PS901 (CAM UNREG protection)
PS902 (MOTOR UNREG protection)
PS903 (VTR UNREG protection)
VS-72 board


IC601
REC/PB amplifier
shield case
IC501
IC602
(EVER 5V regulator)
PS601
(EVER 5V protection)
PS602
(Loading motor power protection)
Q682
(Loading motor power regulator)


MAIN BATTERY
PS903
PS901
PS902
BATTERY TERMIANAL
CN901
CN001
VTR UNREG
CAM UNREG
MOTOR UNREG
(See Page 167)
PIN JACK ASSY
JK-66 BOARD
J901
RFU DC OUTPUT
DC OUT
CN201
VF-40 BOARD
EVF
(See Page 171)
W951
EVF 5V
CN205
CN002
W605
BATT SENSE
CAM ON
VTR ON
VTR UNREG
EVF 5V
REG 5V
VIDEO 5V
CAM UNREG
VTR DC-DC CONV
CAPSTAN DORUM MOTOR DRIVE
CAMERA DC-DC CONV
CN003
AF UNREG
CAM 5V
23V
15V
-9V
(See Page 154)
DC-DC CONVERTER (DD-30 BOARD)
(See Page 135)
PD-18 BOARD
Q201 - 208
CHROMA NOISE REDUCTION
W206
VS-72 BOARD (See Page 143)
Q201,202
CURRENT LIMITER
L228
VIDEO (2)
Q191 - 193
FLYING ERASE OSC
IC101
IC102
REC/PB AMP
VIDEO 5V
Q205,220,241,
Q237 - 239
REC Y
REC C
AMP
Q236
L229
SS 5V
IC205
EXPANTION PORT
PB+POWER SAVE
PB
PB+LINE REC
Q256
Q233 - 235,
Q245 - 249
PB Y
PB C
AMP
Q232
IC201
INPUT SELECT
AGC
VIDEO OUT
Q207
IC202
CCD COMB FILTER
IC204
PAL JOG
Q226
IC203
Y/C PROCESS
VIDEO (1)
CN206
IC701
FOCUS ZOOM MOTOR DRIVE
AF UNREG
CAM 5V
IC703
IRIS DRIVE HALL AMP
IC702
FG AMP HALL AMP
LD-36 BOARD
(See Page 125)
CN701
CN805
PS601
IC602
5V REG
EVER 5V
CAM ON
VTR ON
VTR UNREG
SS 5V
CAM UNREG
PS602
Q681,682
5V REG
Vcc
IC6
5V
W801
AF UNREG
CAM 5V
L251
CAMERA
IC251
5V(A)
CHROMA PROCESS
IC253
5V(A)
TITLE MIX A/D CONV
IC252
5V(A)
EVR
IC363
IC364
5V
AUTO WHITE BALANCE
IC301
L303
5V
ENCODER
IC302
5V
EVR
IC141
L142
5V(D)
SYNC GENERATOR
IC182
IC183
5V(D)
CCD DELAY
IC181
5V(A)
MATRIX
Q31, 32
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L401
L402
L404
L403
23V
15V
-9V
IC361
EVR/ AUTO WHITE BALANCE CPU
EVER 5V
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L01
L02
5V(A)
-9V
5V(D)
15V
· SIGNAL SEPALATION
· AGC/IRIS CONTROL
· TIMING GENERATOR
· V DRIVE
(See Page 120)
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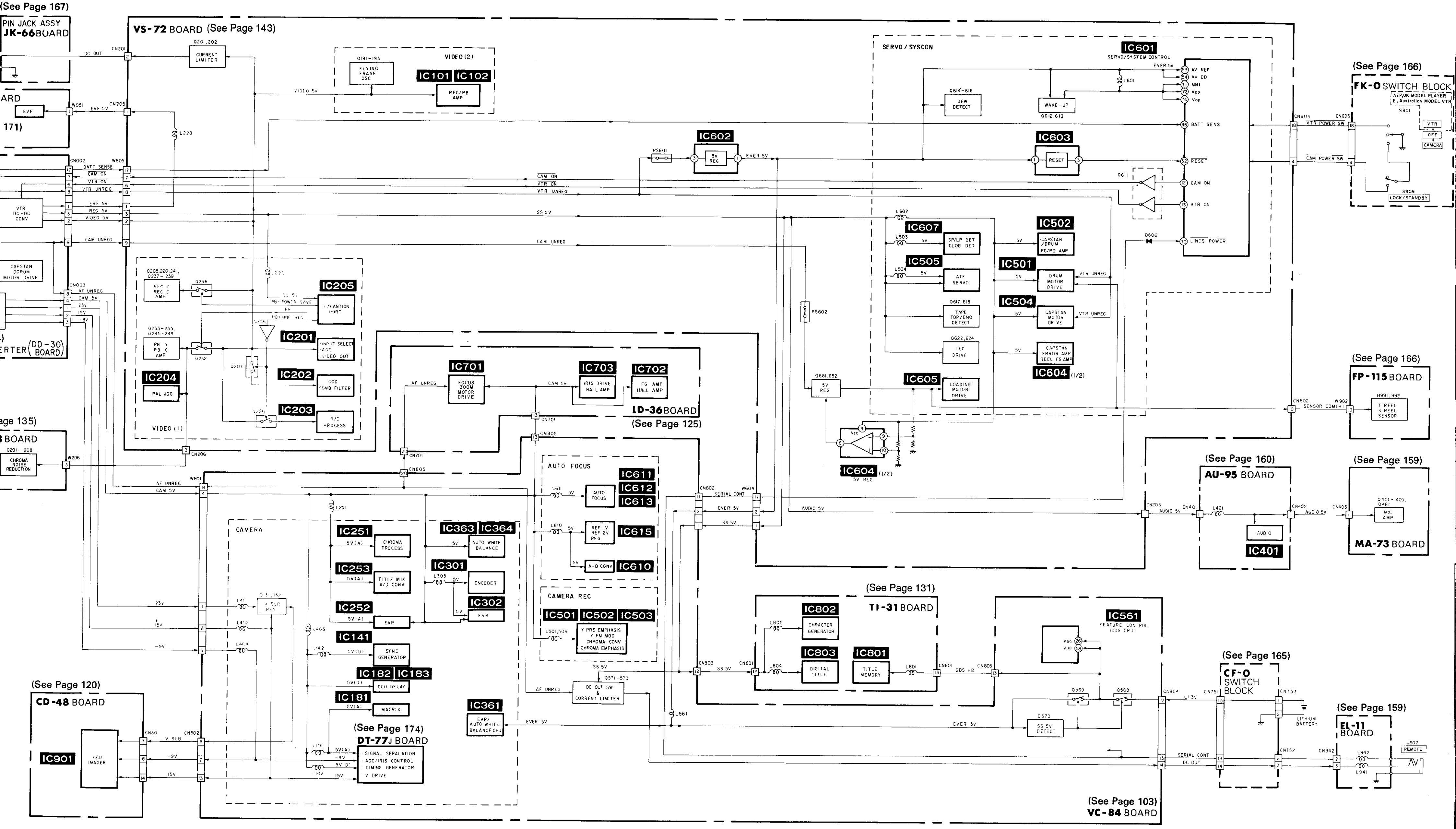
IC901
CCD IMAGER
CN301
CN302
V SUB
-9V
15V
AUTO FOCUS
IC611
IC612
IC613
L611
5V
AUTO FOCUS
L610
5V
REF 1V
REF 2V
REG
IC615
5V
A-D CONV
IC610
CAMERA REC
IC501
IC502
IC503
L501,509
Y PRE EMPHASIS
Y FM MOD
CHPOMA CONV
CHROMA EMPHASIS
SS 5V
Q571 - 573
AF UNREG
DC OUT SW
&
CURRENT LIMITER
L561
CN802
W604
SERIAL CONT
EVER 5V
SS 5V
AUDIO 5V
CN803
CN801
SS 5V
IC802
L805
CHRACTER GENERATOR
IC803
L804
DIGITAL TITLE



(See Page 167)
PIN JACK ASSY
JK-66 BOARD
VS-72 BOARD (See Page 143)
DC OUT
CN201
Q201, 202
CURRENT LIMITER
VIDEO 5V
Q191-193
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VIDEO (2)
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IC102
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EVF
W951
EVF 5V
CN205
L228
171)
CN002
W605
BATT SENSE
CAM ON
VTR ON
VTR UNREG
VTR DC-DC CONV
EVF 5V
REG 5V
VIDEO 5V
CAM UNREG
CAPSTAN DORUM MOTOR DRIVE
CN003
AF UNREG
CAM 5V
23V
15V
-9V
ERTER (DD-30) BOARD
Q205, 220, 241, Q237-239
REC Y REC C AMP
Q236
IC205
SS 5V
PB+POWER SAVE
PB
PB+INH REC
I/O PORT
IC201
INPUT SELECT AGC VIDEO OUT
Q233-235, Q245-249
PB Y PB C AMP
Q232
Q207
IC204
PAL JOG
IC202
CCD COMB FILTER
IC203
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age 135)
BOARD
Q201-208
CHROMA NOISE REDUCTION
W206
CN206
W801
SERVO / SYSCON
IC601
SERVO/SYSTEM CONTROL
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L601
AV REF
AV DD
MNI
VDD
VPP
DEW DETECT
Q614-616
WAKE-UP
Q612, 613
BATT SENS
PS601
IC602
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EVER 5V
IC603
RESET
Q611
CAM ON
VTR ON
LINCS POWER
D606
L602
IC607
L503
SP/LP DET CLOG DET
IC502
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IC505
L504
ATF SERVO
IC501
DRUM MOTOR DRIVE
VTR UNREG
Q617, 618
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IC504
CAPSTAN MOTOR DRIVE
Q622, 624
LED DRIVE
CAPSTAN ERROR AMP REEL FG AMP
IC604 (1/2)
PS602
Q681, 682
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IC605
LOADING MOTOR DRIVE
IC604 (1/2)
5V REG
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(See Page 166)
FK-0 SWITCH BLOCK
AEP, UK MODEL PLAYER
E, Australian MODEL VTR
S901
VTR
OFF
CAMERA
CN603
VTR POWER SW
CAM POWER SW
S909
LOCK/STANDBY
(See Page 166)
FP-115 BOARD
H991, 992
T REEL S REEL SENSOR
CN602
W902
SENSOR COM(+)
IC701
AF UNREG
FOCUS ZOOM MOTOR DRIVE
CAM 5V
IC703
IRIS DRIVE HALL AMP
IC702
FG AMP HALL AMP
LD-36 BOARD
(See Page 125)
CN701
CN805
AUTO FOCUS
IC611
IC612
IC613
L611
AUTO FOCUS
L610
REF 1V REF 2V REG
IC615
A-D CONV
IC610
CAMERA REC
IC501
IC502
IC503
L501, 509
Y PRE EMPHASIS Y FM MOD CHROMA CONV CHROMA EMPHASIS
CN802
W604
SERIAL CONT
EVER 5V
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AUDIO 5V
(See Page 160)
AU-95 BOARD
CN203
CN401
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AUDIO
IC401
CN402
CN405
(See Page 159)
Q401-405, Q481
MIC AMP
MA-73 BOARD
CAMERA
L251
IC251
CHROMA PROCESS
IC363
IC364
AUTO WHITE BALANCE
IC253
TITLE MIX A/D CONV
IC301
L303
ENCODER
IC252
EVR
IC302
EVR
Q131, 132
V SUB REG
L41
L402
L404
L403
IC141
L142
SYNC GENERATOR
IC182
IC183
CCD DELAY
IC181
MATRIX
IC361
EVR/ AUTO WHITE BALANCE CPU
L101
L102
(See Page 174)
DT-77J BOARD
SIGNAL SEPALATION
AGC/IRIS CONTROL
TIMING GENERATOR
V DRIVE
(See Page 120)
CD-48 BOARD
IC901
CCD IMAGER
CN301
CN302
V SUB
-9V
15V
(See Page 131)
TI-31 BOARD
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L805
CHRACTER GENERATOR
IC803
L804
DIGITAL TITLE
IC801
TITLE MEMORY
L801
CN803
CN801
DDS +B
SS 5V
Q571-573
DC OUT SW & CURRENT LIMITER
IC561
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VDD
Q569
Q568
Q570
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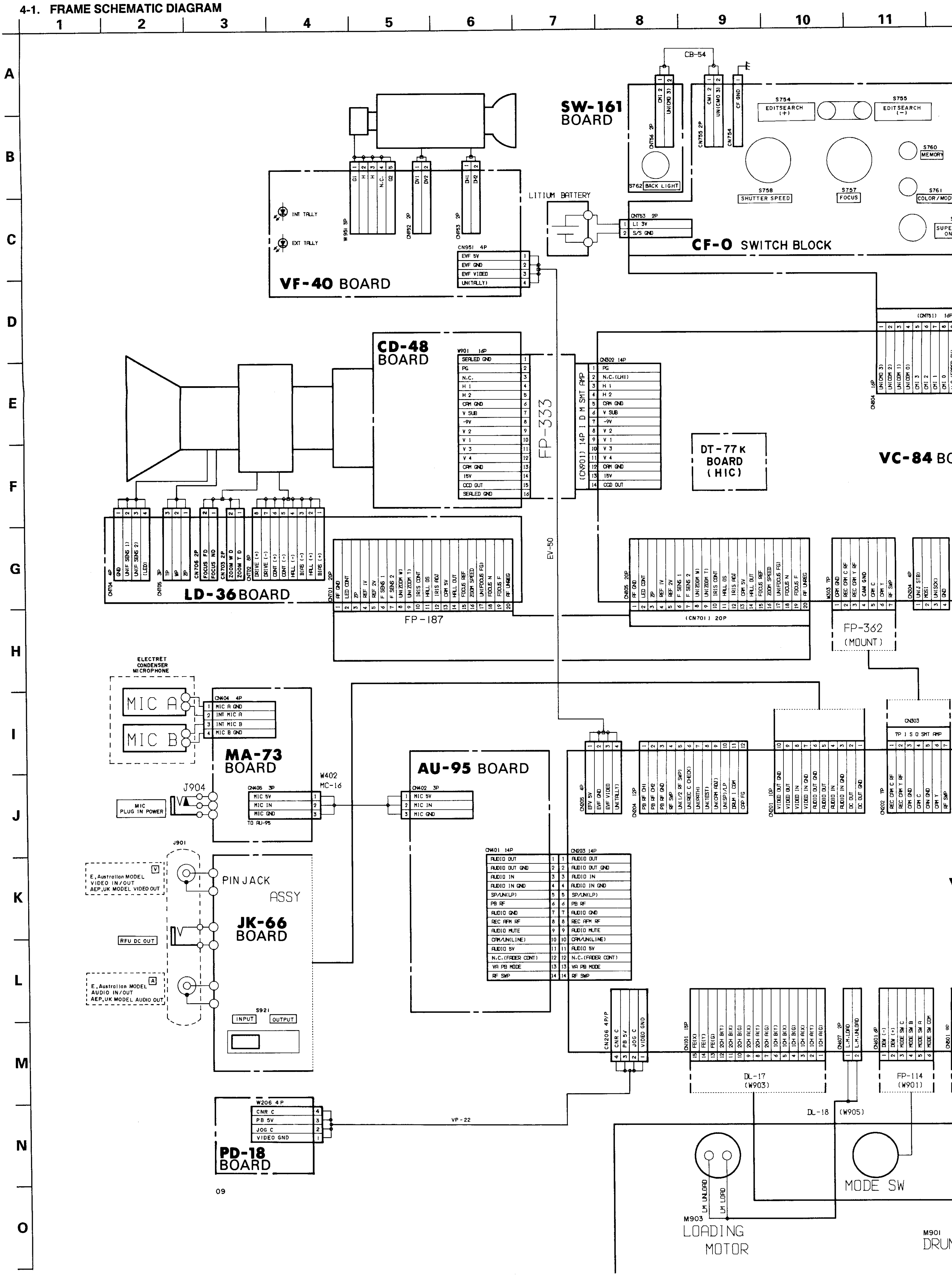
L561
CN804
L13V
(See Page 165)
CF-0 SWITCH BLOCK
CN751
CN753
LITHIUM BATTERY
CN752
SERIAL CONT
DC OUT
(See Page 159)
EL-11 BOARD
CN942
L942
L941
J902
REMOTE
(See Page 103)
VC-84 BOARD

SECTION 4

PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM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A
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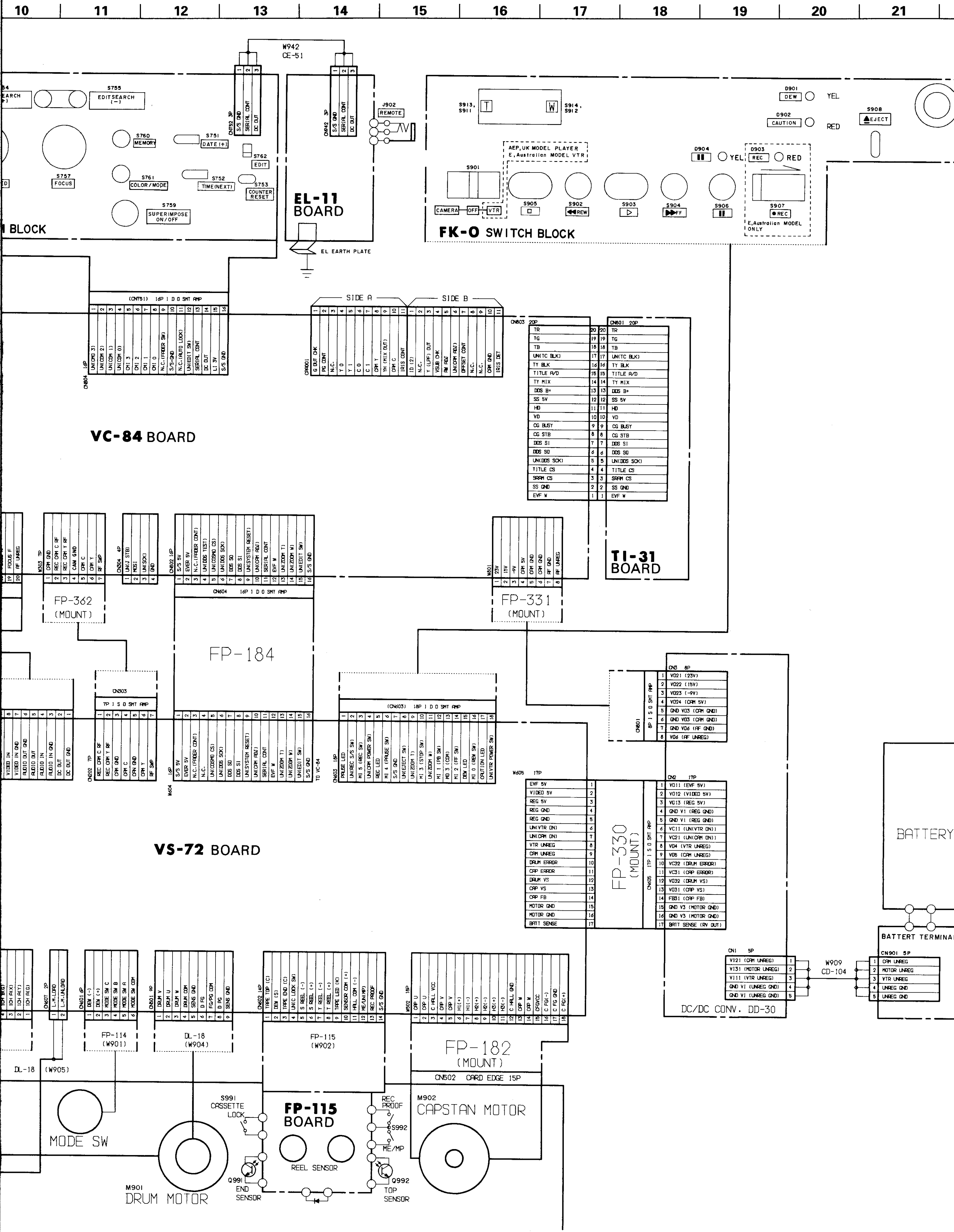
I
J
K
L
M
N
O
CB-54
SW-161 BOARD
CN756 2P
CM1 2
UN(CMD 3)
CN755 2P
CM1 2
UN(CMO 3)
CN754
CF GND
S754 EDITSEARCH (+)
S755 EDITSEARCH (-)
S760 MEMORY
S762 BACK LIGHT
S758 SHUTTER SPEED
S757 FOCUS
S761 COLOR/MOD
SUPE ON
LITIUM BATTERY
CN753 2P
LI 3V
S/S GND
CF-0 SWITCH BLOCK
W951 5P
G1
H
H
N.C.
G2
CN952 2P
DY1
DY2
CN953 2P
DH1
DH2
INT TALLY
EXT TALLY
CN951 4P
EVF 5V
EVF GND
EVF VIDEO
UN(TALLY)
VF-40 BOARD
(CN751) 16P
CN804 16P
UN(CMD 3)
UN(COM 2)
UN(COM 1)
UN(COM 0)
CM1 3
CM1 2
CM1 1
CM1 0
CD-48 BOARD
W901 16P
SEALED GND
PG
N.C.
H 1
H 2
CAM GND
V SUB
-9V
V 2
V 1
V 3
V 4
CAM GND
15V
CCD OUT
SEALED GND
FP-333
(CN901) 14P I D M SMT AMP
CN302 14P
PG
N.C.(LH1)
H 1
H 2
CAM GND
V SUB
-9V
V 2
V 1
V 3
V 4
CAM GND
15V
CCD OUT
DT-77K BOARD (HIC)
VC-84 BO
EV-50
CN704 4P
UNIF SENS 1)
UNIF SENS 2)
(LED)
CN705 3P
TP
WP
2P
CN706 2P
FOCUS FD
FOCUS ND
CN703 2P
ZOOM W D
ZOOM T D
CN702 8P
DRIVE (+)
DRIVE (-)
CONT (+)
CONT (-)
HALL (-)
BIAS (-)
HALL (+)
BIAS (+)
LD-36 BOARD
CN701 20P
AF GND
LED CONT
2P
REF 1V
REF 2V
F SENS 1
F SENS 2
UN(ZOOM W)
UN(ZOOM T)
IRIS CONT
HALL OS
IRIS ADJ
CAM 5V
HALL OUT
FOCUS REF
ZOOM SPEED
UN(FOCUS FG)
FOCUS N
FOCUS F
AF UNREG
FP-187
CN805 20P
(CN701) 20P
W303 7P
CAM GND
REC CAM C RF
REC CAM Y RF
CAM GND
CAM C
CAM Y
RF SWP
CN304 4P
UN(-) STB)
MOSI
UN(SCK)
GND
FP-362 (MOUNT)
ELECTRET CONDENSER MICROPHONE
MIC A
MIC B
CN404 4P
MIC A GND
INT MIC A
INT MIC B
MIC B GND
MA-73 BOARD
J904
MIC PLUG IN POWER
CN405 3P
MIC 5V
MIC IN
MIC GND
TO AU-95
W402 MC-16
AU-95 BOARD
CN402 3P
MIC 5V
MIC IN
MIC GND
CN303
7P I S O SMT AMP
CN205 4P
EFV 5V
EVF GND
EVF VIDEO
UN(TALLY)
CN204 12P
PB RF CH1
PB RF CH2
PB RF GND
RF SWP
UN(1/2 RF SWP)
UN(REC C CHECK)
UN(PATH)
UN(TEST)
UN(CAM ADJ)
UN(SP)/LP
DRUM 1 COM
CAP FG
CN201 10P
VIDEO OUT GND
VIDEO OUT
VIDEO IN
VIDEO IN GND
AUDIO OUT
AUDIO OUT GND
AUDIO IN
AUDIO IN GND
DC OUT
DC OUT GND
CN202 7P
REC CAM C RF
REC CAM Y RF
CAM GND
CAM C
CAM GND
CAM Y
RF SWP
J901
E, Australian MODEL VIDEO IN/OUT AEP,UK MODEL VIDEO OUT
V
PIN JACK ASSY
JK-66 BOARD
RFU DC OUT
E, Australian MODEL AUDIO IN/OUT AEP,UK MODEL AUDIO OUT
A
S921
INPUT
OUTPUT
CN401 14P
AUDIO OUT
AUDIO OUT GND
AUDIO IN
AUDIO IN GND
SP/UN(LP)
PB RF
AUDIO GND
REC AFM RF
AUDIO MUTE
CAM/UN(LINE)
AUDIO 5V
N.C.(FADER CONT)
VA PB MODE
RF SWP
CN203 14P
AUDIO OUT
AUDIO OUT GND
AUDIO IN
AUDIO IN GND
SP/UN(LP)
PB RF
AUDIO GND
REC AFM RF
AUDIO MUTE
CAM/UN(LINE)
AUDIO 5V
N.C.(FADER CONT)
VA PB MODE
RF SWP
CN206 4P/P
CNR C
PB 5V
JOG C
VIDEO GND
CN101 15P
FE(X)
FE(Y)
FE(G)
2CH R(Y)
2CH B(X)
2CH B(G)
2CH R(X)
2CH A(Y)
2CH A(G)
1CH B(Y)
1CH B(X)
1CH A(X)
1CH R(Y)
1CH A(G)
CN607 2P
L.M.LOAD
L.M.UNLOAD
CN601 8P
DEW (-)
DEW (+)
MODE SW C
MODE SW B
MODE SW A
MODE SW COM
CN501 9P
DL-17 (W903)
FP-114 (W901)
DL-18 (W905)
W206 4P
CNR C
PB 5V
JOG C
VIDEO GND
VP-22
PD-18 BOARD
09
LM UNLOAD
LM LOAD
M903 LOADING MOTOR
MODE SW
M901 DRUM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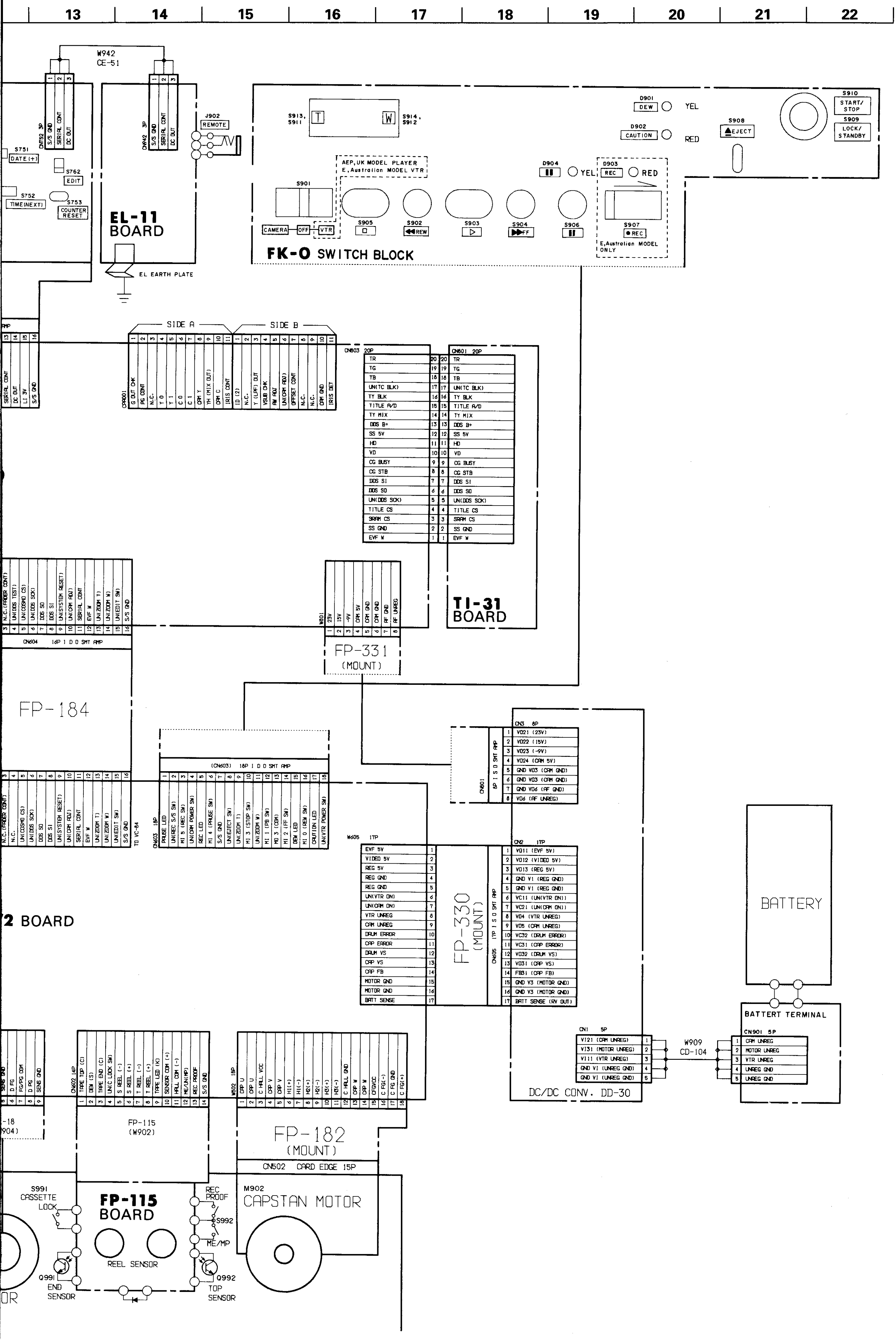
21
W942
CE-51
S755
EDIT SEARCH (−)
S760
MEMORY
S751
DATE (+)
S762
EDIT
S757
FOCUS
S761
COLOR/MODE
S752
TIME(NEXT)
S753
COUNTER RESET
S759
SUPERIMPOSE ON/OFF
BLOCK
CN752 3P
S/S GND
SERIAL CONT
DC OUT
CN942 3P
S/S GND
SERIAL CONT
DC OUT
J902
REMOTE
EL-11 BOARD
EL EARTH PLATE
S913, S911
S914, S912
D901
DEW
YEL
D902
CAUTION
RED
S908
EJECT
AEP,UK MODEL PLAYER
E,Australian MODEL VTR
S901
D904
YEL
D903
REC
RED
CAMERA
OFF
VTR
S905
S902
REW
S903
S904
FF
S906
S907
REC
E,Australian MODEL ONLY
FK-0 SWITCH BLOCK
(CN751) 16P 1 D O SMT AMP
CN804 16P
UN(CAM 3)
UN(COM 2)
UN(COM 1)
UN(COM 0)
CHI 3
CHI 2
CHI 1
CHI 0
N.C.(FADER SW)
S/S-GND
N.C.(AUTO LOCK)
UN(EDIT SW)
SERIAL CONT
DC OUT
LI 3V
S/S GND
SIDE A
SIDE B
CN801
G OUT CHK
PG CONT
N.C.
Y O
Y I
C O
C I
CAM Y
YH (MIX OUT)
CAM C
IRIS CONT
ID (2)
N.C.
Y (LPF) OUT
VSUB CHK
RW ADJ
UN(CAM ADJ)
OFFSET CONT
N.C.
CAM GND
IRIS DET
CN803 20P
CN601 20P
TR
TG
TB
UN(TC BLK)
TY BLK
TITLE A/D
TY MIX
DDS B+
SS 5V
HD
VD
CG BUSY
CG STB
DDS SI
DDS SO
UN(DDS SCK)
TITLE CS
SRAM CS
SS GND
EVF W
VC-84 BOARD
TI-31 BOARD
FOCUS F
AF UNREG
CN303 7P
CAM GND
REC CAM C RF
REC CAM Y RF
CAM GND
CAM C
CAM Y
RF SWP
CN304 4P
UN(J STB)
MOSI
UN(SCK)
GND
CN602 16P
S/S 5V
EVER 5V
N.C.(FADER CONT)
UN(DDS TEST)
UN(COSMO CS)
UN(DDS SCK)
DDS SO
DDS SI
UN(SYSTEM RESET)
UN(CAM ADJ)
SERIAL CONT
EVF W
UN(ZOOM T)
UN(ZOOM W)
UN(EDIT SW)
S/S GND
CN604 16P 1 D O SMT AMP
W801
23V
15V
-9V
CAM 5V
CAM GND
CAM GND
AF GND
AF UNREG
FP-362 (MOUNT)
FP-184
FP-331 (MOUNT)
CN303
7P 1 S O SMT AMP
(CN603) 18P 1 D O SMT AMP
CN3 8P
VO21 (23V)
VO22 (15V)
VO23 (−9V)
VO24 (CAM 5V)
GND VO3 (CAM GND)
GND VO3 (CAM GND)
GND VO6 (AF GND)
VO6 (AF UNREG)
CN601 8P 1 S O SMT AMP
VIDEO IN
VIDEO IN GND
AUDIO OUT GND
AUDIO OUT
AUDIO IN
AUDIO IN GND
DC OUT
DC OUT GND
CN202 7P
REC CAM C RF
REC CAM Y RF
CAM GND
CAM C
CAM GND
CAM Y
RF SWP
W604 16P
S/S 5V
EVER 5V
N.C.(FADER CONT)
N.C.
UN(COSMO CS)
UN(DDS SCK)
DDS SO
DDS SI
UN(SYSTEM RESET)
UN(CAM ADJ)
SERIAL CONT
EVF W
UN(ZOOM T)
UN(ZOOM W)
UN(EDIT SW)
S/S GND
TO VC-84
CN603 18P
PAUSE LED
UN(REC S/S SW)
MI 5 (REC SW)
UN(CAM POWER SW)
REC LED
MI 4 (PAUSE SW)
S/S GND
UN(EJECT SW)
UN(ZOOM T)
MI 3 (STOP SW)
UN(ZOOM W)
MI 1 (PB SW)
MO 3 (COM)
MI 2 (FF SW)
DEW LED
MI 0 (REW SW)
CAUTION LED
UN(VTR POWER SW)
W605 17P
EVF 5V
VIDEO 5V
REG 5V
REG GND
REG GND
UN(VTR ON)
UN(CAM ON)
VTR UNREG
CAM UNREG
DRUM ERROR
CAP ERROR
DRUM VS
CAP VS
CAP FB
MOTOR GND
MOTOR GND
BATT SENSE
FP-330 (MOUNT)
CN605 17P 1 S O SMT AMP
CN2 17P
VO11 (EVF 5V)
VO12 (VIDEO 5V)
VO13 (REG 5V)
GND V1 (REG GND)
GND V1 (REG GND)
VC11 (UN(VTR ON))
VC21 (UN(CAM ON))
VO4 (VTR UNREG)
VO5 (CAM UNREG)
VC32 (DRUM ERROR)
VC31 (CAP ERROR)
VO32 (DRUM VS)
VO31 (CAP VS)
FB31 (CAP FB)
GND V3 (MOTOR GND)
GND V3 (MOTOR GND)
BATT SENSE (RV OUT)
VS-72 BOARD
BATTERY
BATTERT TERMINAL
CN1 5P
V121 (CAM UNREG)
V131 (MOTOR UNREG)
V111 (VTR UNREG)
GND V1 (UNREG GND)
GND V1 (UNREG GND)
W909
CD-104
CN901 5P
CAM UNREG
MOTOR UNREG
VTR UNREG
UNREG GND
UNREG GND
DC/DC CONV. DD-30
1CH R(G)
1CH R(T)
1CH R(G)
CN607 2P
L.M.LOAD
L.M.UNLOAD
CN601 6P
DEW (−)
DEW (+)
MODE SW C
MODE SW B
MODE SW A
MODE SW COM
CN501 9P
DRUM V
DRUM U
DRUM W
DRUM COM
SENS GND
D FG
FG/PG COM
D PG
SENS GND
CN602 14P
TAPE TOP (C)
DEW (S)
TAPE END (C)
UN(C LOCK SW)
S REEL (−)
S REEL (+)
T REEL (−)
T REEL (+)
TAPE LED (K)
SENSOR COM (+)
HALL COM (−)
ME/UN(MP)
REC PROOF
S/S GND
W502 18P
CAP U
CAP U
C HALL VCC
CAP V
CAP V
H1(+)
H1(−)
H2(+)
H2(−)
H3(+)
H3(−)
C HALL GND
CAP W
CAP W
CFGVCC
C FG(−)
C FG GND
C FG(+)
FP-114 (W901)
DL-18 (W904)
FP-115 (W902)
FP-182 (MOUNT)
CN502 CARD EDGE 15P
DL-18
(W905)
MODE SW
M901
DRUM MOTOR
S991
CASSETTE LOCK
Q991
END SENSOR
FP-115 BOARD
REEL SENSOR
REC PROOF
S992
ME/MP
Q992
TOP SENSOR
M902
CAPSTAN MOTOR

FRAME FRAME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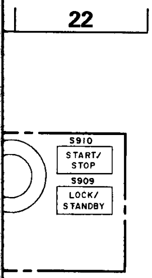
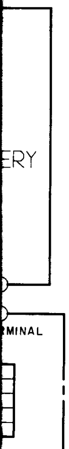
W942
CE-51
CN752 3P
S/S GND
SERIAL CONT
DC OUT
CN942 3P
S/S GND
SERIAL CONT
DC OUT
S751
DATE(+)
S762
EDIT
S752
TIME(NEXT)
S753
COUNTER RESET
J902
REMOTE
EL-11
BOARD
EL EARTH PLATE
S913, S911
T
W
S914, S912
AEP,UK MODEL PLAYER
E,Australian MODEL VTR
S901
CAMERA
OFF
VTR
S905
□
S902
◀◀REW
S903
▷
S904
▶▶FF
S906
❚❚
D901
DEW
YEL
D902
CAUTION
RED
D904
❚❚
YEL
D903
REC
RED
S907
●REC
E,Australian MODEL ONLY
S908
▲EJECT
S910
START/STOP
S909
LOCK/STANDBY
FK-0 SWITCH BLOCK
AMP
13
14
15
16
SERIAL CONT
DC OUT
LI 3V
S/S GND
SIDE A
SIDE B
CPA001
1 G OUT CHK
2 PG CONT
3 N.C.
4 Y 0
5 Y 1
6 C 0
7 C 1
8 CAM Y
9 YH (MIX OUT)
10 CAM C
11 IRIS CONT
1 ID (2)
2 N.C.
3 Y (LPF) OUT
4 VSUB CHK
5 AW ADJ
6 UN(CAM ADJ)
7 OFFSET CONT
8 N.C.
9 N.C.
10 CAM GND
11 IRIS DET
CN603 20P
20 TR
19 TG
18 TB
17 UN(TC BLK)
16 TY BLK
15 TITLE A/D
14 TY MIX
13 DDS B+
12 SS 5V
11 HD
10 VD
9 CG BUSY
8 CG STB
7 DDS SI
6 DDS SO
5 UN(DDS SCK)
4 TITLE CS
3 SRAM CS
2 SS GND
1 EVF W
CN601 20P
20 TR
19 TG
18 TB
17 UN(TC BLK)
16 TY BLK
15 TITLE A/D
14 TY MIX
13 DDS B+
12 SS 5V
11 HD
10 VD
9 CG BUSY
8 CG STB
7 DDS SI
6 DDS SO
5 UN(DDS SCK)
4 TITLE CS
3 SRAM CS
2 SS GND
1 EVF W
TI-31
BOARD
3 N.C.(FADER CONT)
4 UN(DDS TEST)
5 UN(COSMO CS)
6 UN(DDS SCK)
7 DDS SO
8 DDS SI
9 UN(SYSTEM RESET)
10 UN(CAM ADJ)
11 SERIAL CONT
12 EVF W
13 UN(ZOOM T)
14 UN(ZOOM W)
15 UN(EDIT SW)
16 S/S GND
CN604 16P I D O SMT AMP
FP-184
W801
1 23V
2 15V
3 -9V
4 CAM 5V
5 CAM GND
6 CAM GND
7 AF GND
8 AF UNREG
FP-331
(MOUNT)
3 N.C.(FADER CONT)
4 N.C.
5 UN(COSMO CS)
6 DDS SO
7 DDS SI
8 UN(SYSTEM RESET)
9 UN(CAM ADJ)
10 SERIAL CONT
11 EVF W
12 UN(ZOOM T)
13 UN(ZOOM W)
14 UN(EDIT SW)
15 S/S GND
16
TO VC-84
(CN603) 18P I D O SMT AMP
CN603 18P
1 PAUSE LED
2 UN(REC S/S SW)
3 MI 5 (REC SW)
4 UN(CAM POWER SW)
5 REC LED
6 MI 4 (PAUSE SW)
7 S/S GND
8 UN(EJECT SW)
9 UN(ZOOM T)
10 MI 3 (STOP SW)
11 UN(ZOOM W)
12 MI 1 (PB SW)
13 MO 3 (COM)
14 MI 2 (FF SW)
15 DEW LED
16 MI 0 (REW SW)
17 CAUTION LED
18 UN(VTR POWER SW)
CN801
8P I S O SMT AMP
CN3 8P
1 VO21 (23V)
2 VO22 (15V)
3 VO23 (-9V)
4 VO24 (CAM 5V)
5 GND VO3 (CAM GND)
6 GND VO3 (CAM GND)
7 GND VO6 (AF GND)
8 VO6 (AF UNREG)
W605 17P
EVF 5V 1
VIDEO 5V 2
REG 5V 3
REG GND 4
REG GND 5
UN(VTR ON) 6
UN(CAM ON) 7
VTR UNREG 8
CAM UNREG 9
DRUM ERROR 10
CAP ERROR 11
DRUM VS 12
CAP VS 13
CAP FB 14
MOTOR GND 15
MOTOR GND 16
BATT SENSE 17
FP-330
(MOUNT)
CN605 17P I S O SMT AMP
CN2 17P
1 VO11 (EVF 5V)
2 VO12 (VIDEO 5V)
3 VO13 (REG 5V)
4 GND V1 (REG GND)
5 GND V1 (REG GND)
6 VC11 (UN(VTR ON))
7 VC21 (UN(CAM ON))
8 VO4 (VTR UNREG)
9 VO5 (CAM UNREG)
10 VC32 (DRUM ERROR)
11 VC31 (CAP ERROR)
12 VO32 (DRUM VS)
13 VO31 (CAP VS)
14 FB31 (CAP FB)
15 GND V3 (MOTOR GND)
16 GND V3 (MOTOR GND)
17 BATT SENSE (RV OUT)
2 BOARD
BATTERY
BATTERT TERMINAL
CN1 5P
VI21 (CAM UNREG) 1
VI31 (MOTOR UNREG) 2
VI11 (VTR UNREG) 3
GND VI (UNREG GND) 4
GND VI (UNREG GND) 5
W909
CD-104
CN901 5P
1 CAM UNREG
2 MOTOR UNREG
3 VTR UNREG
4 UNREG GND
5 UNREG GND
DC/DC CONV. DD-30
SENS GND
D FG
FG/PG COM
D PG
SENS GND
-18
904)
CN602 14P
1 TAPE TOP (C)
2 DEW (S)
3 TAPE END (C)
4 UN(C LOCK SW)
5 S REEL (-)
6 S REEL (+)
7 T REEL (-)
8 T REEL (+)
9 TAPE LED (K)
10 SENSOR COM (+)
11 HALL COM (-)
12 ME/UN(MP)
13 REC PROOF
14 S/S GND
FP-115
(W902)
W502 18P
1 CAP U
2 CAP U
3 C HALL VCC
4 CAP V
5 CAP V
6 H1(+)
7 H1(-)
8 H2(+)
9 H2(-)
10 H3(+)
11 H3(-)
12 C HALL GND
13 CAP W
14 CAP W
15 CFGVCC
16 C FG(-)
17 C FG GND
18 C FG(+)
FP-182
(MOUNT)
CN502 CARD EDGE 15P
S991
CASSETTE
LOCK
FP-115
BOARD
REEL SENSOR
Q991
END
SENSOR
REC
PROOF
S992
ME/MP
Q992
TOP
SENSOR
M902
CAPSTAN MOTOR
OR

FRAME FRAME


22
S910
START/
STOP
S909
LOCK/
STANDBY



4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.

(In addition to this , the necessary note is printed in each block.)

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing. } The inner two layers' patterns are not indicated.
- ▨ : Pattern of the rear side.*
- Circled numbers refer to waveforms.*
- (B) or (F), etc. of capacitors indicate the temperature characteristics.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/16W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μ μ F.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair.*
- —— : B+ Line.*
- - - - : B– Line*.
- ⇨ : IN/OUT direction of (+, –) B LINE.*
- Circled numbers refer to waveforms.*

Note: The components identi- fied by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

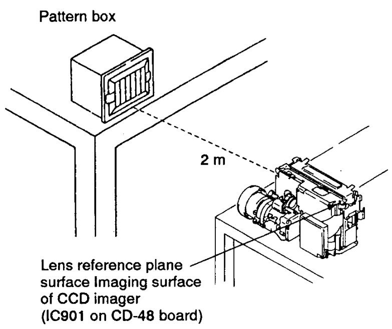
When indicating parts by reference number, please include the board name.

- **Measuring conditions voltage value and waveform.**

(CAMERA, DIGITAL TITLE block)

- The object is color bar chart of pattern box.
- Voltages are dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

1. Connection


Pattern box
2 m
Lens reference plane surface Imaging surface of CCD imager (IC901 on CD-48 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

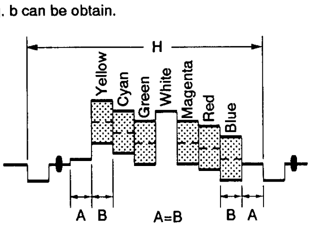

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A

Fig. a (Video output terminal output waveform)

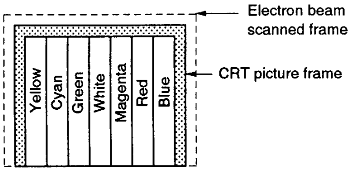

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

(VIDEO, SERVO/SYSTEM CONTROL, MODE CONTROL, AUDIO, VIEW FINDER block)

- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.*

- *: indicated by the color red.

VC-84 (CAMERA) PRINTED WIRING BOARDS

—Ref. No. VC-84 Board: 2000 series—

- **For printed wiring boards.**
- VC-84 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- Through hole (⊗) is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

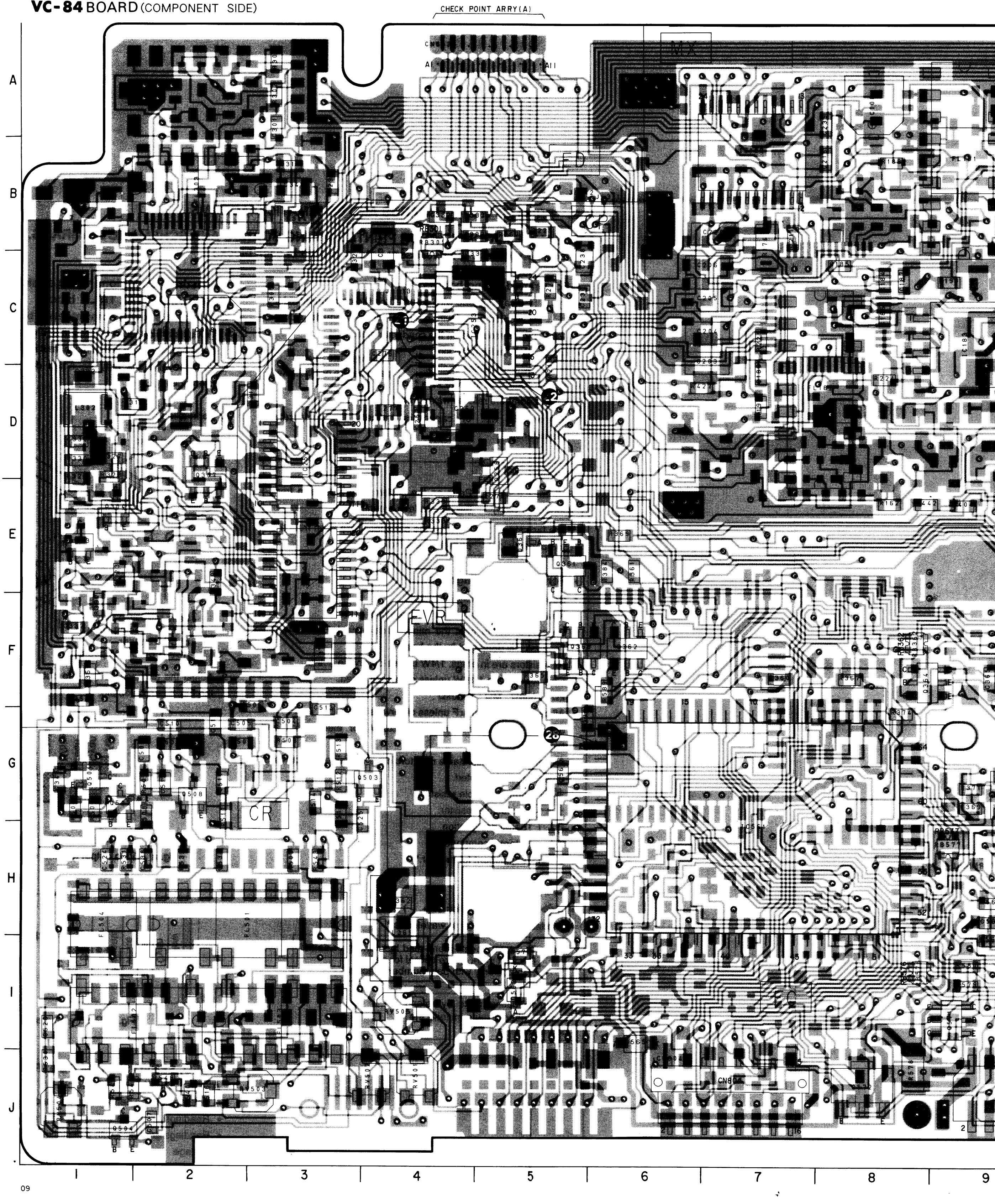
DIODE

D101	8-719-404-46	DIODE MA110
D102	8-719-404-46	DIODE MA110
D131	8-719-404-32	DIODE MA141WA
D132	8-719-404-46	DIODE MA110
D141	8-719-949-46	DIODE 1T32
D142	8-719-949-46	DIODE 1T32
D301	8-719-404-46	DIODE MA110
D361	8-719-404-32	DIODE MA141WA
D362	8-719-404-46	DIODE MA110
D561	8-719-404-49	DIODE MA111
D562	⚠8-719-420-51	DIODE MA729
D563	8-719-404-46	DIODE MA110
D564	8-719-404-46	DIODE MA110
D565	8-719-404-46	DIODE MA110
D611	8-719-404-32	DIODE MA141WA

IC

IC141	8-752-335-85	IC C
IC181	8-752-034-17	IC C
IC182	8-752-330-15	IC C
IC183	8-752-332-69	IC C
IC251	8-752-034-21	IC C
IC252	8-759-946-00	IC M
IC253	8-752-039-49	IC C
IC301	8-752-033-34	IC C
IC302	8-759-946-00	IC M
IC361	8-759-037-60	IC M
IC362	8-759-937-56	IC S
IC363	8-759-106-23	IC M
IC364	8-759-100-95	IC U
IC501	8-759-144-23	IC U
IC502	8-759-144-23	IC U
IC503	8-752-031-63	IC C
IC561	8-759-151-23	IC U
IC610	8-752-334-49	IC C
IC611	8-759-502-04	IC M
IC612	8-752-326-18	IC C

VC-84 BOARD (COMPONENT SIDE)



09

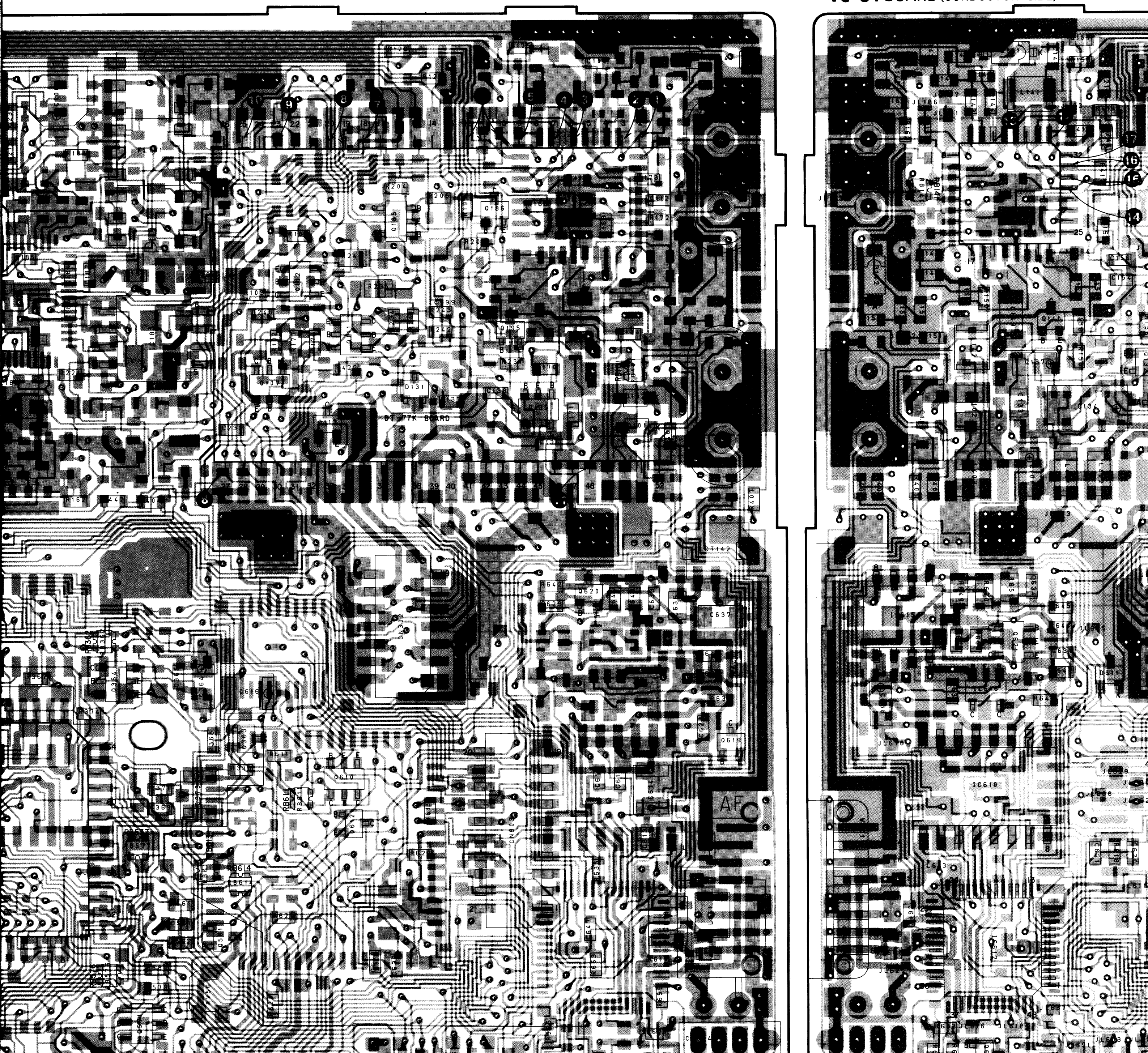
IC

Ref. No.	Part No.	Description
IC141	8-752-335-85	IC CXD2109Q
IC181	8-752-034-17	IC CXA1338R
IC182	8-752-330-15	IC CXL1503N
IC183	8-752-332-69	IC CXL5504M
IC251	8-752-034-21	IC CXA1339R
IC252	8-759-946-00	IC MB88341PFV
IC253	8-752-039-49	IC CXA1393AN
IC301	8-752-033-34	IC CXA1072R
IC302	8-759-946-00	IC MB88341PFV
IC361	8-759-037-60	IC MC68HC05N4-SC406667
IC362	8-759-937-56	IC S-8054ALB-LM-S
IC363	8-759-106-23	IC MC14066BF
IC364	8-759-100-95	IC UPC324G2
IC501	8-759-144-23	IC UPC1037GR
IC502	8-759-144-23	IC UPC1037GR
IC503	8-752-031-63	IC CXA1047M
IC561	8-759-151-23	IC UPD7503GF-J51-3B8
IC610	8-752-334-49	IC CXD1172AM
IC611	8-759-502-04	IC MB88346PFV
IC612	8-752-326-18	IC CXD1204R
IC613	8-759-037-59	IC MC68HC05C4FU-SC411534
IC615	8-759-100-94	IC UPC358G2
IC616	8-759-030-74	IC SC14S66F

TRANSISTOR

Ref. No.	Part No.	Description
Q101	8-729-907-47	TRANSISTOR IMZ1T108
Q102	8-729-907-47	TRANSISTOR IMZ1T108
Q106	8-729-602-36	TRANSISTOR 2SA1602
Q107	8-729-907-47	TRANSISTOR IMZ1T108
Q111	8-729-907-47	TRANSISTOR IMZ1T108
Q112	8-729-907-47	TRANSISTOR IMZ1T108
Q113	8-729-921-58	TRANSISTOR DTA144TU
Q131	8-729-421-23	TRANSISTOR XN1216
Q132	8-729-117-32	TRANSISTOR 2SC4177
Q135	8-729-403-42	TRANSISTOR XN1401
Q141	8-729-117-32	TRANSISTOR 2SC4177
Q142	8-729-117-32	TRANSISTOR 2SC4177
Q181	8-729-117-32	TRANSISTOR 2SC4177
Q182	8-729-402-78	TRANSISTOR XN6401
Q183	8-729-602-36	TRANSISTOR 2SA1602
Q184	8-729-117-32	TRANSISTOR 2SC4177
Q185	8-729-421-23	TRANSISTOR XN1216
Q186	8-729-602-36	TRANSISTOR 2SA1602TP
Q187	8-729-602-36	TRANSISTOR 2SA1602
Q188	8-729-117-32	TRANSISTOR 2SC4177
Q189	8-729-602-36	TRANSISTOR 2SA1602
Q190	8-729-117-32	TRANSISTOR 2SC4177
Q191	8-729-402-78	TRANSISTOR XN6401
Q192	8-729-402-78	TRANSISTOR XN6401
Q193	8-729-402-78	TRANSISTOR XN6401
Q194	8-729-602-36	TRANSISTOR 2SA1602
Q195	8-729-602-36	TRANSISTOR 2SA1602
Q196	8-729-117-32	TRANSISTOR 2SC4177
Q255	8-729-907-47	TRANSISTOR IMZ1T108
Q256	8-729-905-18	TRANSISTOR DTC144EU
Q257	8-729-907-47	TRANSISTOR IMZ1T108
Q302	8-729-602-36	TRANSISTOR 2SA1602
Q303	8-729-602-36	TRANSISTOR 2SA1602
Q304	8-729-117-32	TRANSISTOR 2SC4177
Q305	8-729-117-32	TRANSISTOR 2SC4177
Q307	8-729-402-81	TRANSISTOR XN4501
Q309	8-729-602-36	TRANSISTOR 2SA1602
Q312	8-729-117-32	TRANSISTOR 2SC4177
Q361	8-729-403-07	TRANSISTOR XN1213
Q362	8-729-403-10	TRANSISTOR XN6215
Q363	8-729-11	
Q364	8-729-40	
Q365	8-729-40	
Q367	8-729-11	
Q368	8-729-40	
Q501	8-729-11	
Q502	8-729-11	
Q503	8-729-60	
Q504	8-729-11	
Q505	8-729-10	
Q508	8-729-11	
Q509	8-729-60	
Q561	8-729-60	
Q563	8-729-90	
Q564	8-729-92	
Q565	8-729-40	
Q566	8-729-40	
Q567	8-729-40	
Q568	8-729-10	
Q569	8-729-60	

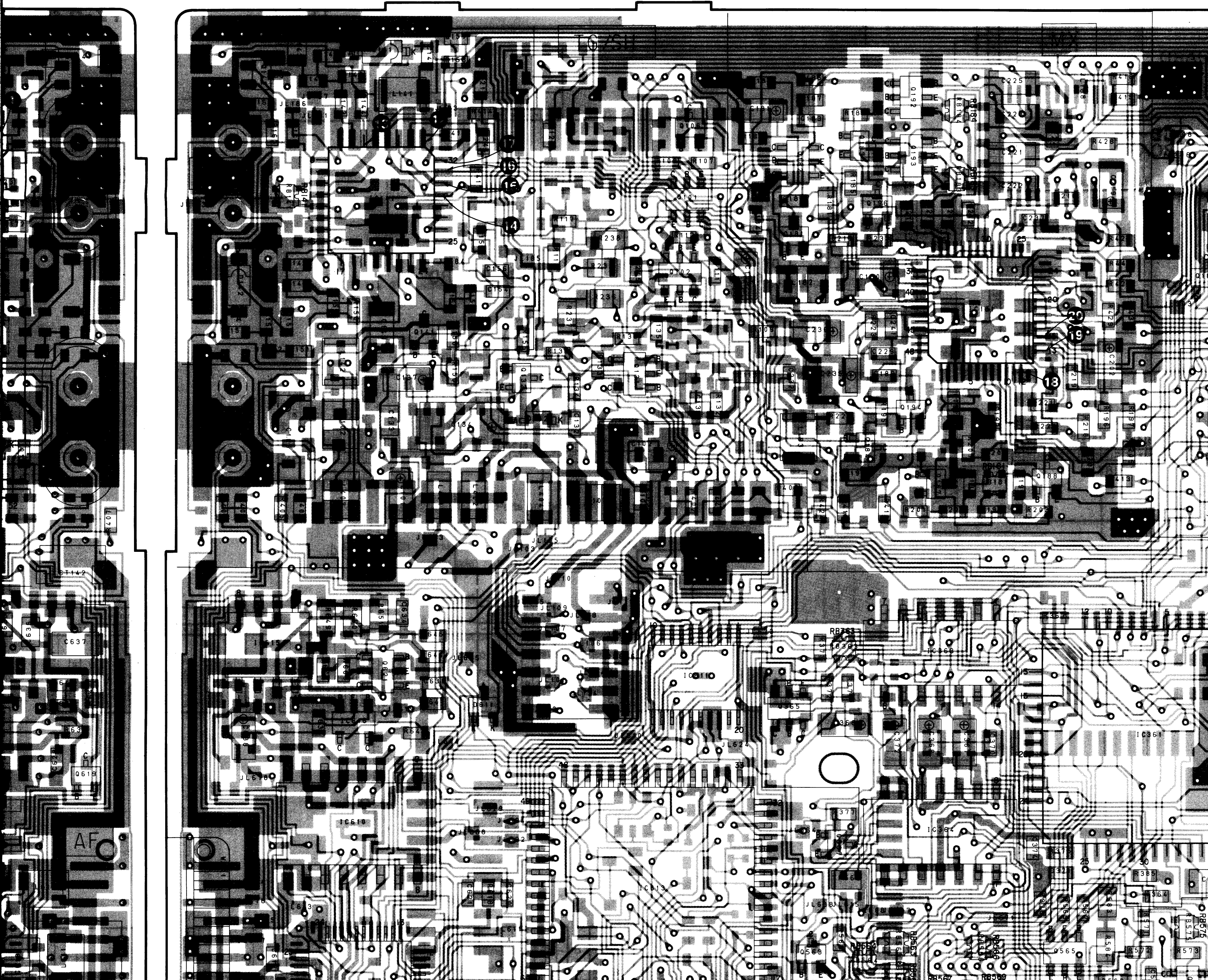
VC-84 BOARD (CONDUCTOR SIDE)



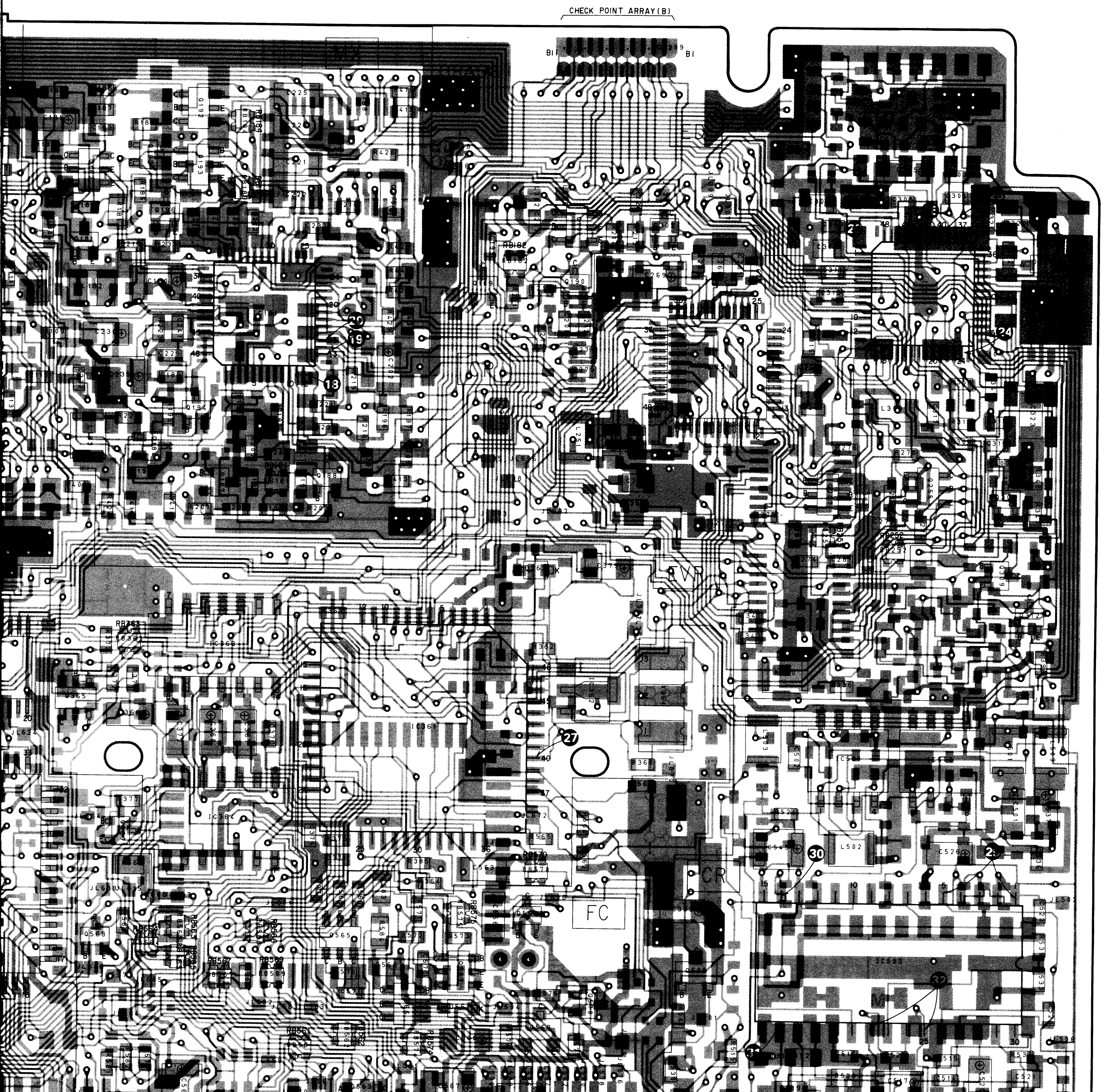
RANSISTOR

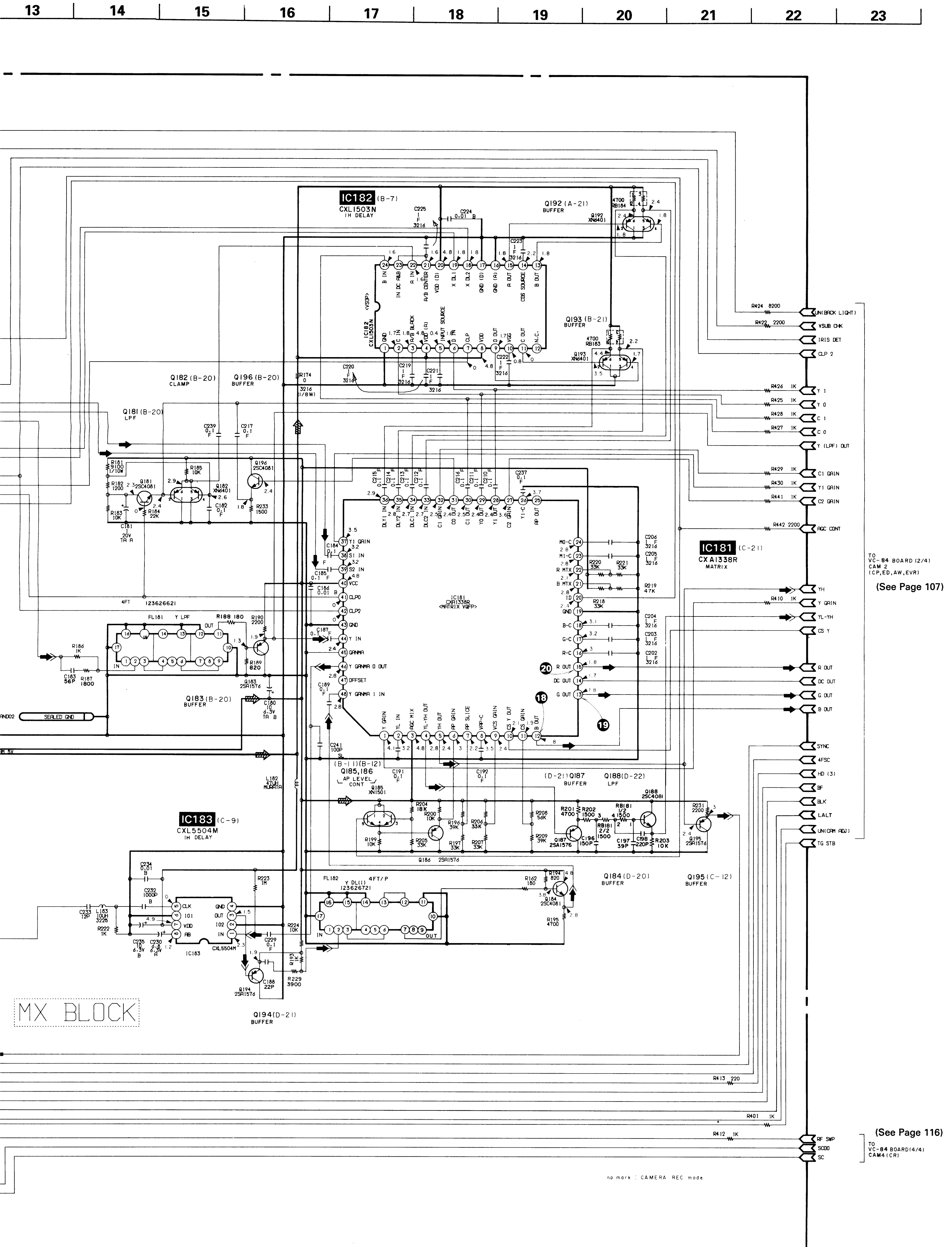
	7	TRANSISTOR IMZ1T108
	7	TRANSISTOR IMZ1T108
	6	TRANSISTOR 2SA1602
	7	TRANSISTOR IMZ1T108
	7	TRANSISTOR IMZ1T108
	7	TRANSISTOR IMZ1T108
	8	TRANSISTOR DTA144TU
	3	TRANSISTOR XN1216
	2	TRANSISTOR 2SC4177
	2	TRANSISTOR XN1401
	2	TRANSISTOR 2SC4177
	2	TRANSISTOR 2SC4177
	2	TRANSISTOR 2SC4177
	8	TRANSISTOR XN6401
	6	TRANSISTOR 2SA1602
	2	TRANSISTOR 2SC4177
	3	TRANSISTOR XN1216
	6	TRANSISTOR 2SA1602TP
	6	TRANSISTOR 2SA1602
	2	TRANSISTOR 2SC4177
Q189	8-729-602-36	TRANSISTOR 2SA1602
Q190	8-729-117-32	TRANSISTOR 2SC4177
Q191	8-729-402-78	TRANSISTOR XN6401
Q192	8-729-402-78	TRANSISTOR XN6401
Q193	8-729-402-78	TRANSISTOR XN6401
Q194	8-729-602-36	TRANSISTOR 2SA1602
Q195	8-729-602-36	TRANSISTOR 2SA1602
Q196	8-729-117-32	TRANSISTOR 2SC4177
Q255	8-729-907-47	TRANSISTOR IMZ1T108
Q256	8-729-905-18	TRANSISTOR DTC144EU
Q257	8-729-907-47	TRANSISTOR IMZ1T108
Q302	8-729-602-36	TRANSISTOR 2SA1602
Q303	8-729-602-36	TRANSISTOR 2SA1602
Q304	8-729-117-32	TRANSISTOR 2SC4177
Q305	8-729-117-32	TRANSISTOR 2SC4177
Q307	8-729-402-81	TRANSISTOR XN4501
Q309	8-729-602-36	TRANSISTOR 2SA1602
Q312	8-729-117-32	TRANSISTOR 2SC4177
Q361	8-729-403-07	TRANSISTOR XN1213
Q362	8-729-403-10	TRANSISTOR XN6215
Q363	8-729-117-32	TRANSISTOR 2SC4177
Q364	8-729-403-10	TRANSISTOR XN6215
Q365	8-729-402-78	TRANSISTOR XN6401
Q367	8-729-117-32	TRANSISTOR 2SC4177
Q368	8-729-403-10	TRANSISTOR XN6215
Q501	8-729-117-32	TRANSISTOR 2SC4177
Q502	8-729-117-32	TRANSISTOR 2SC4177
Q503	8-729-602-36	TRANSISTOR 2SA1602
Q504	8-729-117-32	TRANSISTOR 2SC4177
Q505	8-729-102-07	TRANSISTOR 2SC2223-F13
Q508	8-729-117-32	TRANSISTOR 2SC4177
Q509	8-729-602-36	TRANSISTOR 2SA1602
Q561	8-729-602-36	TRANSISTOR 2SA1602
Q563	8-729-905-18	TRANSISTOR DTC144EU
Q564	8-729-921-08	TRANSISTOR DTC144TU
Q565	8-729-402-78	TRANSISTOR XN6401
Q566	8-729-402-19	TRANSISTOR XN6501
Q567	8-729-402-78	TRANSISTOR XN6401
Q568	8-729-109-44	TRANSISTOR 2SK94
Q569	8-729-602-36	TRANSISTOR 2SA1602
Q570	8-729-905-15	TRANSISTOR DTC144WU
Q571	8-729-920-39	TRANSISTOR IMT1US
Q572	8-729-805-25	TRANSISTOR 2SB1121
Q573	8-729-905-18	TRANSISTOR DTC144EU
Q610	8-729-403-10	TRANSISTOR XN6215
Q612	8-729-921-08	TRANSISTOR DTC144TU
Q613	8-729-117-32	TRANSISTOR 2SC4177
Q614	8-729-117-32	TRANSISTOR 2SC4177
Q619	8-729-117-32	TRANSISTOR 2SC4177
Q620	8-729-117-32	TRANSISTOR 2SC4177
Q621	8-729-402-19	TRANSISTOR XN6501

VC-84 BOARD (CONDUCTOR SIDE)



Q570	8-729-905-15	TRANSISTOR DTC144WU
Q571	8-729-920-39	TRANSISTOR IMT1US
Q572	8-729-805-25	TRANSISTOR 2SB1121
Q573	8-729-905-18	TRANSISTOR DTC144EU
Q610	8-729-403-10	TRANSISTOR XN6215
Q612	8-729-921-08	TRANSISTOR DTC144TU
Q613	8-729-117-32	TRANSISTOR 2SC4177
Q614	8-729-117-32	TRANSISTOR 2SC4177
Q619	8-729-117-32	TRANSISTOR 2SC4177
Q620	8-729-117-32	TRANSISTOR 2SC4177
Q621	8-729-402-19	TRANSISTOR XN6501

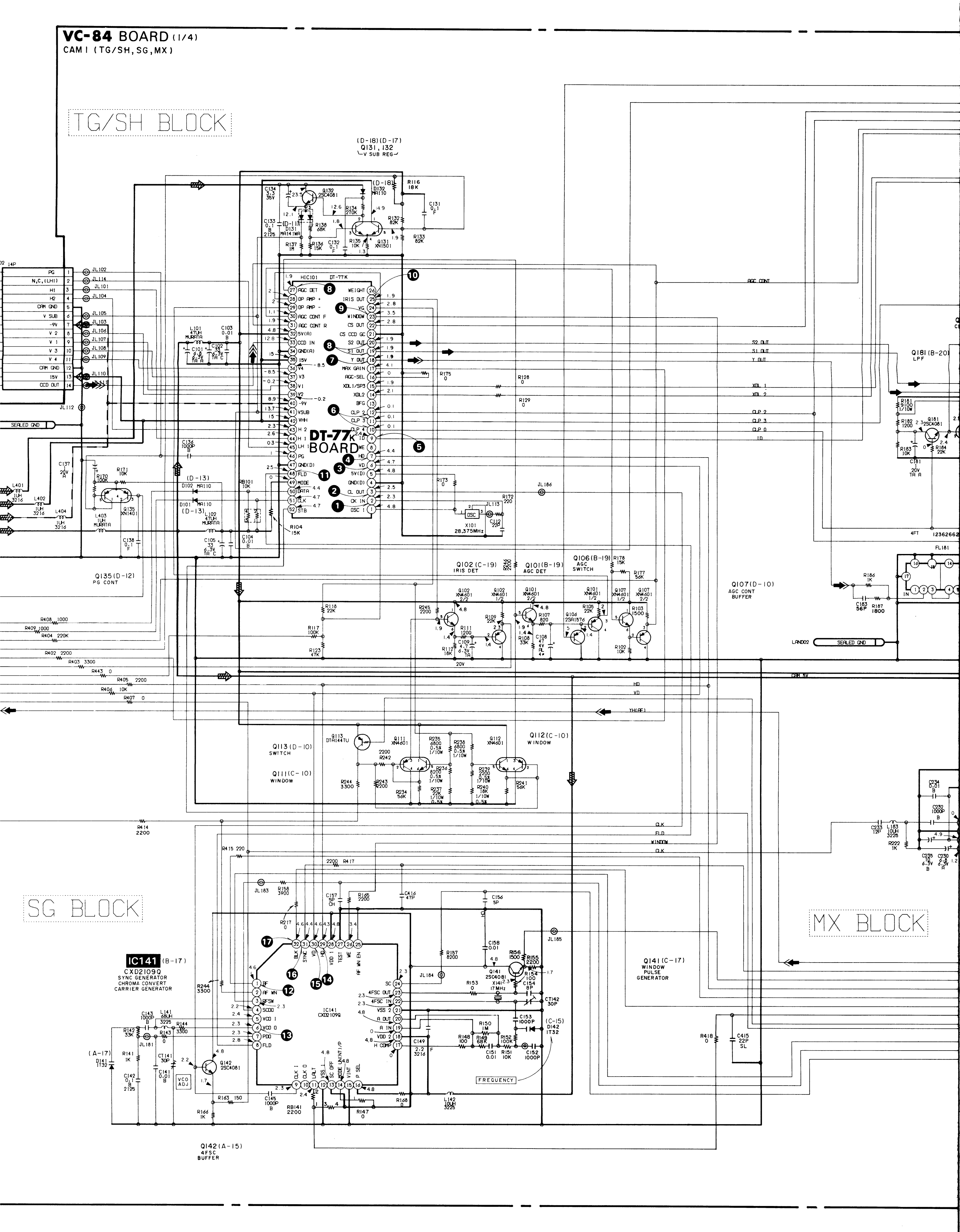

CHECK POINT ARRAY (B)
B11
B1
EVR
FC
CR
IC501
IC503
L502
W303
1-635-757-
21
19
20
21
22
23
24
25
26
27


13
14
15
16
17
18
19
20
21
22
23
IC182 (B-7)
CXL1503N
1H DELAY
IC182 CXL1503N <VSOP>
Q192 (A-21)
BUFFER
Q193 (B-21)
BUFFER
Q182 (B-20)
CLAMP
Q196 (B-20)
BUFFER
Q181 (B-20)
LPF
IC181 (C-21)
CXA1338R
MATRIX
IC181 CXA1338R <MATRIX VQFP>
FL181 Y LPF
Q183 (B-20)
BUFFER
SEALED GND
Q185,186 (B-11)(B-12)
AP LEVEL CONT
(D-21) Q187
BUFFER
Q188 (D-22)
LPF
IC183 (C-9)
CXL5504M
1H DELAY
FL182 Y DL(1) 4FT/P 123626721
Q184 (D-20)
BUFFER
Q195 (C-12)
BUFFER
Q194 (D-21)
BUFFER
MX BLOCK
LIN(BACK LIGHT)
VSUB CHK
IRIS DET
CLP 2
Y 1
Y 0
C 1
C 0
Y (LPF) OUT
C1 GAIN
Y1 GAIN
C2 GAIN
AGC CONT
YH
Y GAIN
YL-YH
CS Y
R OUT
DC OUT
G OUT
B OUT
SYNC
4FSC
HD (3)
BF
BLK
LALT
LIN(CAM ADJ)
TG STB
RF SWP
SCOO
SC
TO VC-84 BOARD (2/4) CAM 2 (CP,ED,AW,EVR)
(See Page 107)
TO VC-84 BOARD(4/4) CAM4 (CR)
(See Page 116)
no mark : CAMERA REC mode

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.

VC-84 BOARD (1/4)

CAM I (TG/SH, SG, MX)


3
4
5
6
7
8
9
10
11
12
13
14
TG/SH BLOCK
SG BLOCK
MX BLOCK
(D-18)(D-17)
Q131, 132
V SUB REG
HIC101 DT-77K
DT-77K BOARD
AGC DET
OP AMP +
OP AMP -
AGC CONT F
AGC CONT R
5V(A)
CCD IN
GND(A)
15V
V4
V3
V1
V2
-9V
VSUB
VHH
H 2
H 1
LH 1
PG
GND(D)
FLD
MODE
DATA
CLK
STB
WEIGHT
IRIS OUT
VG
WINDOW
CS OUT
CS CCD GC
S2 OUT
S1 OUT
Y OUT
MAX GAIN
AGC-SEL
XDL1/SP3
XDL2
BFG
CLP 2
CLP 3
CLP 4
ID
WE
HD
VD
5V(D)
GND(D)
CL OUT
CK IN
OSC 1
PG
N,C,(LH1)
H1
H2
CAM GND
V SUB
-9V
V 2
V 1
V 3
V 4
CAM GND
15V
CCD OUT
JL102
JL114
JL101
JL104
JL105
JL103
JL106
JL107
JL108
JL109
JL110
JL111
JL112
SEALED GND
L101 47UH MURATA
C103 0.01 B
C101 6.8 6.3V TA A
C102 47 6.3V TA C
C134 3.3 35V
Q132 2SC4081
D132 MA110
R116 18K
C131 0.1 F
C133 0.1 B 2125
D131 MA141WA
R137 1M
R136 15K
C132 0.1 F
R135 10K
Q131 XN1501
R134 270K
R138 68K
R132 82K
R133 82K
R175 0
R128 0
R129 0
R173 0
R172 220
JL113
OSC
X101 28.375MHz
C112 22P
JL186
C136 1000P B
C137 20V A
R170 100K
R171 10K
(D-13)
D102 MA110
D101 MA110
(D-13)
L102 47UH MURATA
RB101 10K
R104 15K
Q135 XN1401
L401 1UH 3216
L402 1UH 3216
L404 1UH 3216
L403 1UH MURATA
C138 0.1 F
C104 0.01 B
C105 33 6.3V TA C
Q135 (D-12) PG CONT
R408 1000
R409 1000
R404 220K
R402 2200
R403 3300
R443 0
R405 2200
R406 10K
R407 0
R118 22K
R117 100K
R123 47K
Q102 (C-19) IRIS DET
Q101 (B-19) AGC DET
Q106 (B-19) AGC SWITCH
R178 15K
R177 56K
Q102 XN4601 2/2
Q102 XN4601 1/2
Q101 XN4601 2/2
Q101 XN4601 1/2
Q107 XN4601 1/2
Q107 XN4601 2/2
R245 2200
R109 22K
R111 1200
C109 4.7 6.3V TA
R112 18K
R107 820
R108 33K
C108 47 4V AL
Q106 2SA1576
R105 22K
R103 1500
R102 10K
20V
Q107 (D-10) AGC CONT BUFFER
AGC CONT
S2 OUT
S1 OUT
Y OUT
XDL 1
XDL 2
CLP 2
CLP 3
CLP 0
ID
Q181 (B-20) LPF
R181 9100 1/10W
R182 1200
Q181 2SC4081
R183 10K
R184 22K
C181 20V TA A
FL181
R186 1K
C183 56P
R187 1800
LAND02
SEALED GND
CAM 5V
HD
VD
YH(AF)
Q113 DTA144TU
Q111 XN4601
Q112 XN4601
Q113 (D-10) SWITCH
Q111 (C-10) WINDOW
Q112 (C-10) WINDOW
R242 2200
R235 6800 0.5% 1/10W
R238 6800 0.5% 1/10W
R236 8200 0.5% 1/10W
R239 2200 0.5% 1/10W
R244 3300
R243 2200
R234 56K
R237 22K 1/10W 0.5%
R240 18K 1/10W 0.5%
R241 56K
R414 2200
CLK
FLD
WINDOW
CLK
C234 0.01 B
C232 1000P B
C233 12P
L183 10UH 3225
R222 1K
C235 6.3V B
C230 6.8 6.3V B
R415 220
R417 2200
JL183
R158 3900
C157 5P CH
R165 2200
C416 47P
C156 5P
R217 0
C158 0.01
JL185
IC141 (B-17)
CXD2109Q
SYNC GENERATOR
CHROMA CONVERT
CARRIER GENERATOR
BF
AF WN
BFSW
SCDO
VCO 1
VCO 0
PDO
FLD
BLK
SYNC
HD
VDD 1
TEST
WE
AF WN EN
SC
4FSC OUT
4FSC IN
VSS 2
A OUT
A IN
VDD 2
H COMP
CLK 1
CLK 0
LALT
VSS 1
SC OFF
SIDE
VINT
P SEL
IC141 CXD2109Q
R157 8200
JL184
R153 0
Q141 2SC4081
X141 17MHz
R156 1500
R155 2200
R154 100
C154 8P
CT142 30P
C153 1000P
D142 1T32
(C-15)
R150 1M
R148 100
R149 68K
R152 100K
C151 0.01
R151 10K
C152 1000P
C149
2.2 3216
Q141 (C-17) WINDOW PULSE GENERATOR
R418 0
C415 22P SL
R244 3300
C143 1000P B
L141 68UH 3225
R142 33K
R144 3300
R143 0
JL181
(A-17)
D141 1T32
R141 1K
CT141 30P
C141 0.01 B
VCO ADJ
C142 0.1 B 2125
Q142 2SC4081
R163 150
R166 1K
C145 1000P B
RB141 2200
R147 0
R168 0
L142 10UH 3225
FREQUENCY
Q142 (A-15) 4FSC BUFFER
4FT
12362662

1

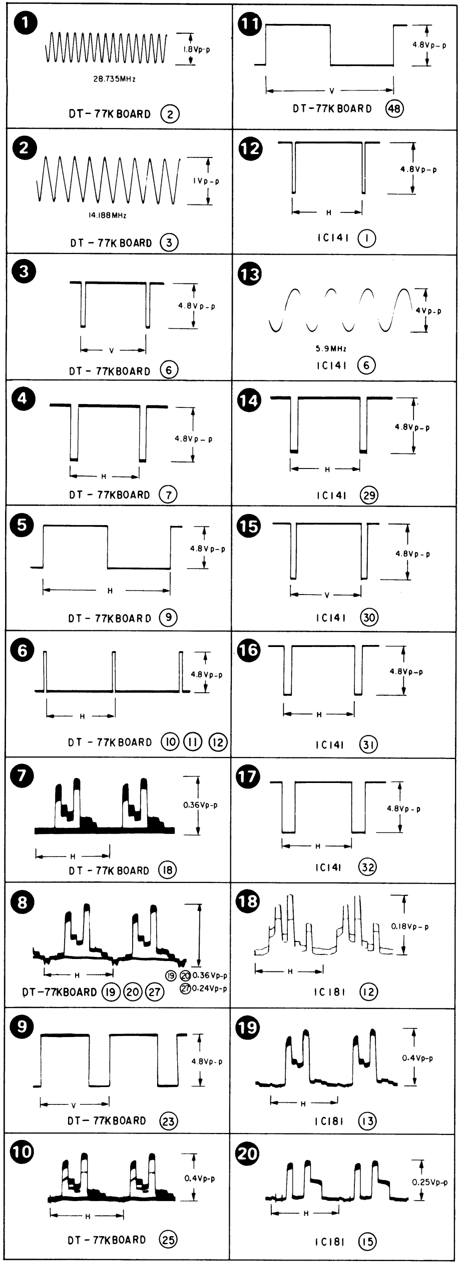
—Ref. No. VC-84

A

B

C

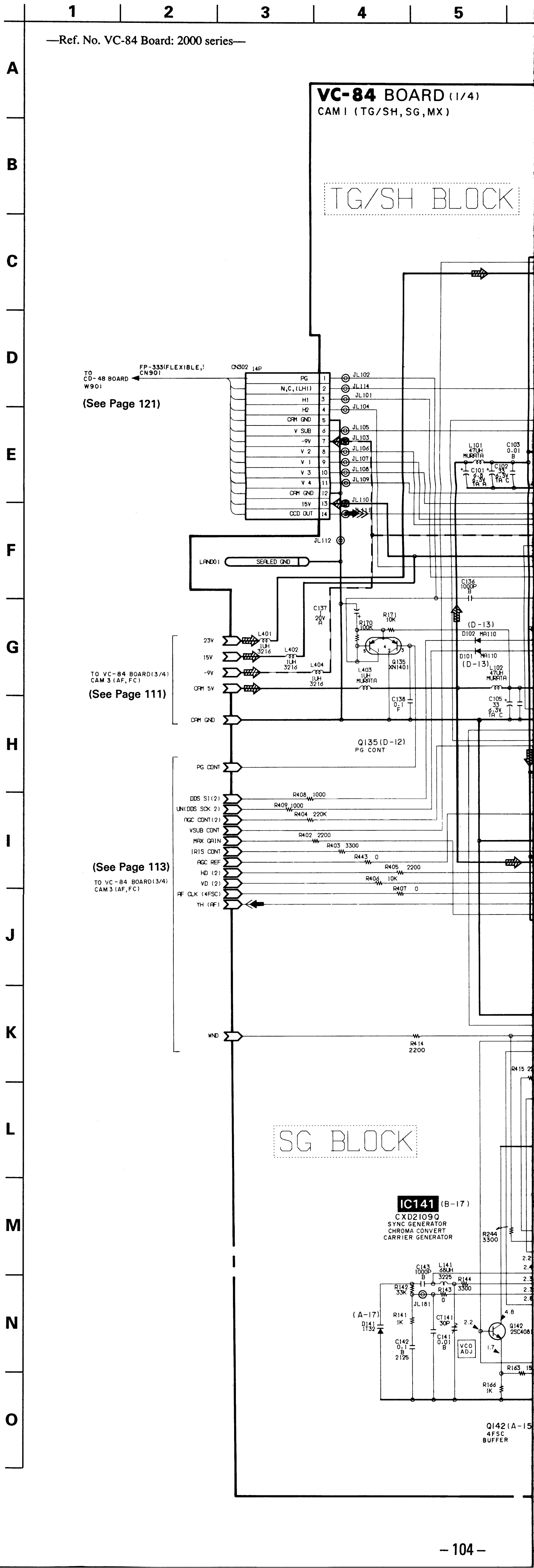
VC-84 BOARD (TG/SH, SG, MX)



- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	⇛	⇛	
PB				

—Ref. No. VC-84 Board: 2000 series—


1
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4
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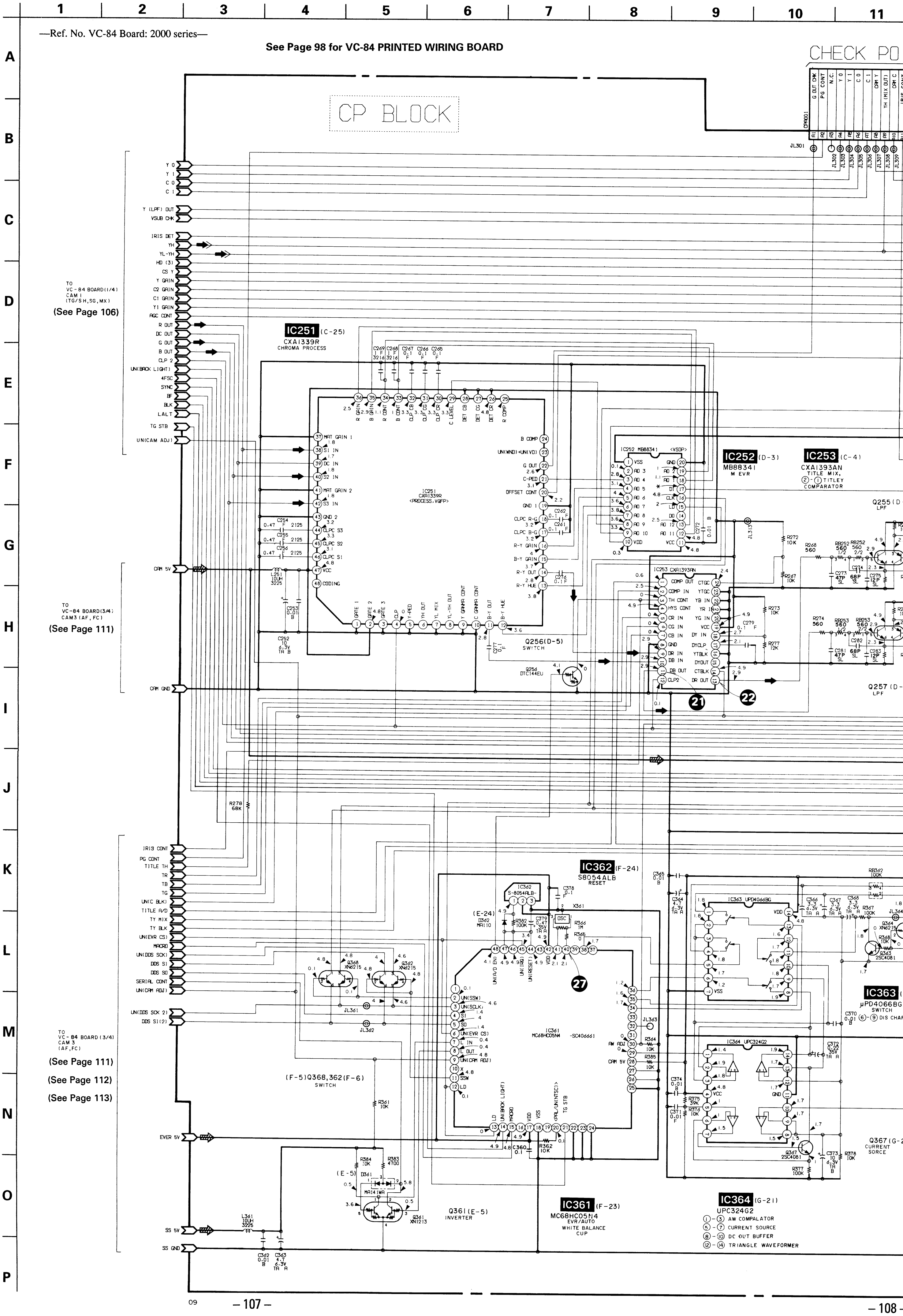
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
VC-84 BOARD (1/4)
CAM I (TG/SH, SG, MX)
TG/SH BLOCK
TO CD-48 BOARD W901
FP-333(FLEXIBLE) CN901
(See Page 121)
CN302 14P
PG
N,C,(LH1)
H1
H2
CAM GND
V SUB
-9V
V 2
V 1
V 3
V 4
CAM GND
15V
CCD OUT
JL102
JL114
JL101
JL104
JL105
JL103
JL106
JL107
JL108
JL109
JL110
JL111
JL112
LAND01
SEALED GND
L101 47UH MURATA
C103 0.01 B
C101 6.8 6.3V TA A
C102 33 6.3V TA C
C136 1000P B
C137 20V
R170 100K
R171 10K
Q135 XN1401
(D-13) D102 MA110
D101 MA110 (D-13)
L102 47UH MURATA
C105 33 6.3V TA C
L401 1UH 3216
L402 1UH 3216
L404 1UH 3216
L403 1UH MURATA
C138 0.1 F
23V
15V
-9V
CAM 5V
CAM GND
TO VC-84 BOARD(3/4) CAM 3 (AF, FC)
(See Page 111)
Q135 (D-12) PG CONT
PG CONT
DDS SI(2)
UNI(DDS SCK 2)
AGC CONT(2)
VSUB CONT
MAX GAIN
IRIS CONT
AGC REF
HD (2)
VD (2)
AF CLK (4FSC)
YH (AF)
R408 1000
R409 1000
R404 220K
R402 2200
R403 3300
R443 0
R405 2200
R406 10K
R407 0
(See Page 113)
TO VC-84 BOARD(3/4) CAM 3 (AF, FC)
WND
R414 2200
R415
SG BLOCK
IC141 (B-17)
CXD2109Q
SYNC GENERATOR
CHROMA CONVERT
CARRIER GENERATOR
R244 3300
C143 1000P B
L141 68UH 3225
R144 3300
R142 33K
R143 0
JL181
(A-17) D141 1T32
R141 1K
CT141 30P
C141 0.01 B
VCO ADJ
C142 0.1 B 2125
2.2
1.7
4.8
Q142 2SC408
R163
R166 1K
Q142 (A-15) 4FSC BUFFER

VC-84 (CAMERA) SCHEMATIC DIAGRAM

—Ref. No. VC-84 Board: 2000 series—

See Page 98 for VC-84 PRINTED WIRING BOARD


1
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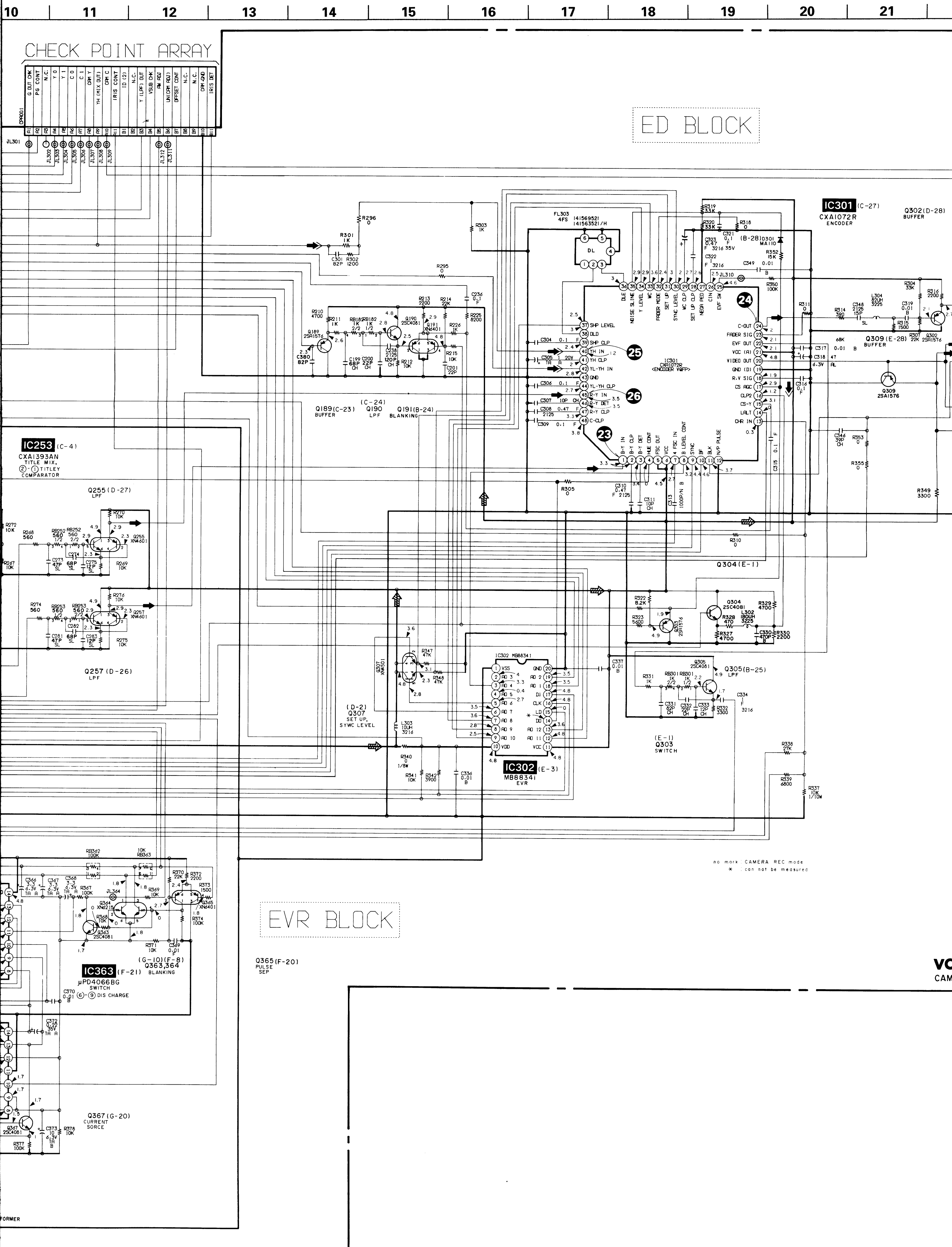
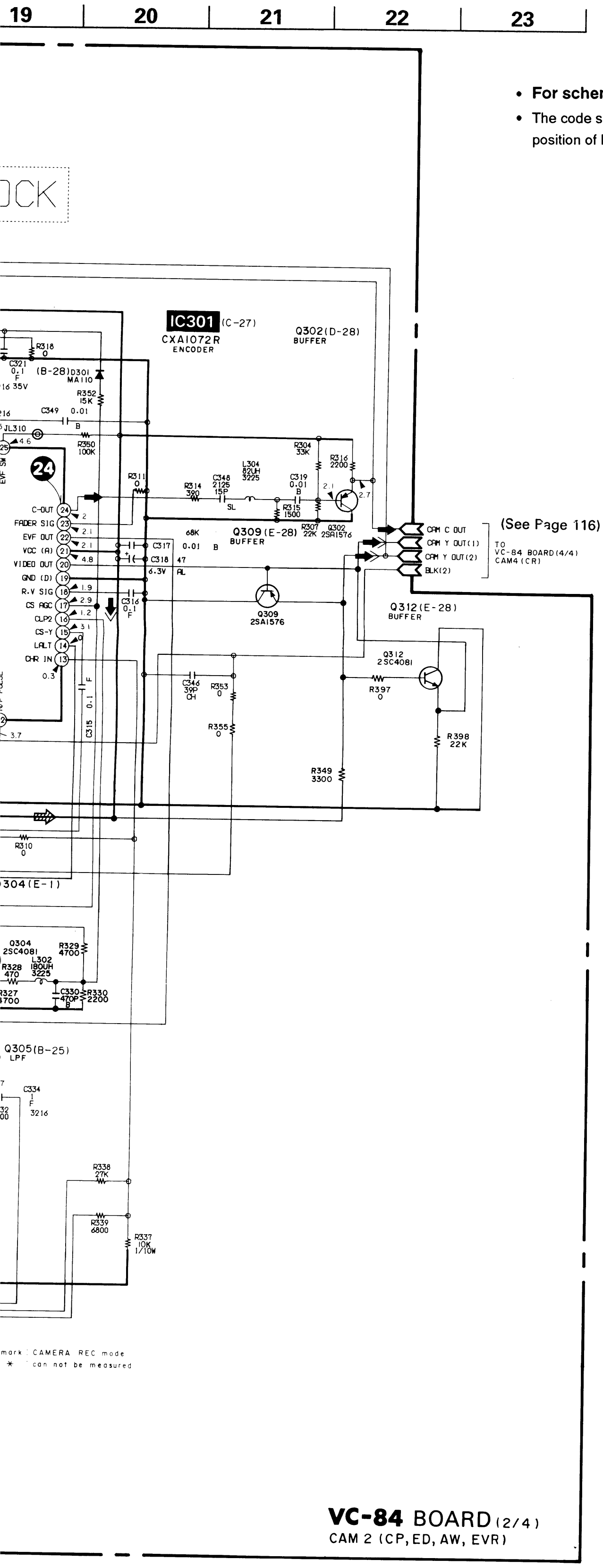
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
CP BLOCK
CHECK PO
Y 0
Y 1
C 0
C 1
Y (LPF) OUT
VSUB CHK
IRIS DET
YH
YL-YH
HD (3)
CS Y
Y GAIN
C2 GAIN
C1 GAIN
Y1 GAIN
AGC CONT
R OUT
DC OUT
G OUT
B OUT
CLP 2
UN(BACK LIGHT)
4FSC
SYNC
BF
BLK
LALT
TG STB
UN(CAM ADJ)
TO VC-84 BOARD(1/4) CAM 1 (TG/SH,SG,MX)
(See Page 106)
CAM 5V
CAM GND
TO VC-84 BOARD(3/4) CAM3 (AF, FC)
(See Page 111)
IC251 (C-25)
CXA1339R
CHROMA PROCESS
IC251 CXA1339R <PROCESS,VQFP>
IC252 (D-3)
MB88341
M EVR
IC253 (C-4)
CXA1393AN
TITLE MIX,
②-① TITLEY COMPARATOR
Q255 (D
LPF
Q256 (D-5)
SWITCH
Q256 DTC144EU
Q257 (D-
LPF
21
22
R278 68K
IRIS CONT
PG CONT
TITLE TH
TR
TB
TG
UN(C BLK)
TITLE A/D
TY MIX
TY BLK
UN(EVR CS)
MACRO
UN(DDS SCK)
DDS S1
DDS SO
SERIAL CONT
UN(CAM ADJ)
UN(DDS SCK 2)
DDS SI(2)
TO VC-84 BOARD(3/4) CAM 3 (AF,FC)
(See Page 111)
(See Page 112)
(See Page 113)
EVER 5V
SS 5V
SS GND
IC362 (F-24)
S8054ALB
RESET
IC361 MC68HC05N4 -SC406661
27
(F-5)Q368,362(F-6)
SWITCH
Q361 (E-5)
INVERTER
IC361 (F-23)
MC68HC05N4
EVR/AUTO WHITE BALANCE CUP
IC363 (
μPD4066BG
SWITCH
⑥-⑨ DIS CHAR
IC364 (G-21)
UPC324G2
①-③ AW COMPALATOR
⑤-⑦ CURRENT SOURCE
⑧-⑩ DC OUT BUFFER
⑫-⑭ TRIANGLE WAVEFORMER
Q367 (G-2
CURRENT SORCE
Q363 2SC4081
Q364 XN6215
JL361
JL362
JL363
D361 MA141WA
Q361 XN1213
L361 10UH 3225
C362 0.01 B
C363 4.7 6.3V TA A

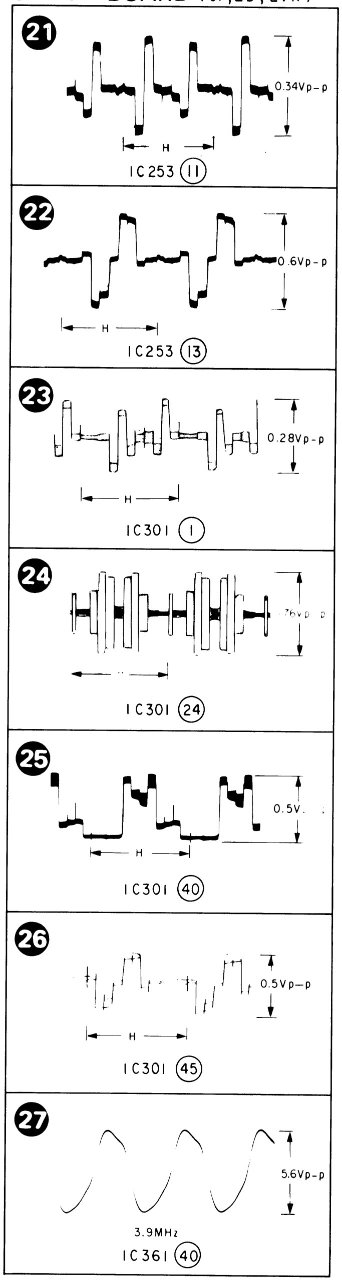

10
11
12
13
14
15
16
17
18
19
20
21
CHECK POINT ARRAY
G OUT CHK
PG CONT
N.C.
Y 0
Y 1
C 0
C 1
CAM Y
YH (MIX OUT)
CAM C
IRIS CONT
ID (2)
N.C.
Y (LPF) OUT
VSUB CHK
AW ADJ
UN(CAM ADJ)
OFFSET CONT
N.C.
N.C.
CAM GND
IRIS DET
CPA001
JL301
ED BLOCK
IC301 (C-27)
CXA1072R
ENCODER
Q302(D-28)
BUFFER
FL303
4FS 141569521
141563521/H
DL
IC301
CXA1072R
<ENCODER VQFP>
SHP LEVEL
DLD
SHP CLP
YH IN
YH CLP
YL-YH IN
GND
YL-YH CLP
R-Y IN
B-Y DET
R-Y CLP
C-CLP
DLE
NOISE SLINE
Y LEVEL
WC
FADER MODE
SET UP
SYNC LEVEL
WC CLP
SET UP CLP
NEGA PED
CIN
EVF SW
C-OUT
FADER SIG
EVF OUT
VCC (A)
VIDEO OUT
GND (D)
R-Y SIG
CS AGC
CLP2
CS-Y
LALT
CHR IN
B-Y IN
B-Y CLP
B-Y DET
HUE CONT
FSC OUT
VCC
4 FSC IN
B LEVEL CONT
SYNC
BF
BLK
N/P PULSE
Q309 (E-28)
BUFFER
Q309
2SA1576
Q189(C-23)
BUFFER
Q190 (C-24)
LPF
Q191(B-24)
BLANKING
IC253 (C-4)
CXA1393AN
TITLE MIX,
②-① TITLEY
COMPARATOR
Q255 (D-27)
LPF
Q257 (D-26)
LPF
Q304(E-1)
Q304
2SC4081
Q303
2SA1576
Q305(B-25)
LPF
(E-1)
Q303
SWITCH
IC302 MB88341
VSS
AO 3
AO 4
AO 5
AO 6
AO 7
AO 8
AO 9
AO 10
VDD
GND
AO 2
AO 1
DI
CLK
LD
DO
AO 12
AO 11
VCC
IC302 (E-3)
MB88341
EVR
(D-2)
Q307
SET UP,
SYWC LEVEL
no mark : CAMERA REC mode
* : can not be measured
EVR BLOCK
Q365(F-20)
PULSE
SEP
IC363 (F-21)
μPD4066BG
SWITCH
(G-10)(F-8)
Q363,364
BLANKING
C370 0.01 ⑥-⑨ DIS CHARGE
Q367(G-20)
CURRENT
SORCE
FORMER
VC
CAM


19
20
21
22
23
CK
IC301 (C-27)
CXA1072R
ENCODER
Q302(D-28)
BUFFER
R318 0
C321 0.1 F
16 35V
(B-28)D301 MA110
R352 15K
C349 0.01 B
JL310
R350 100K
R304 33K
R316 2200
24
R311 0
R314 330
C348 2125 15P
L304 82UH 3225
C319 0.01 B
R315 1500
SL
C-OUT
FADER SIG
EVF OUT
VCC (A)
VIDEO OUT
GND (D)
R.V SIG
CS AGC
CLP2
CS-Y
LALT
CHR IN
C317
C318
6.3V
68K
0.01
47
AL
Q309(E-28)
BUFFER
R307 22K
Q302 2SA1576
CAM C OUT
CAM Y OUT(1)
CAM Y OUT(2)
BLK(2)
(See Page 116)
TO VC-84 BOARD(4/4) CAM4(CR)
Q309 2SA1576
C316 0.1 F
Q312(E-28)
BUFFER
Q312 2SC4081
R397 0
C346 39P CH
R353 0
R355 0
R398 22K
R349 3300
C315 0.1 F
R310 0
Q304(E-1)
Q304 2SC4081
R329 4700
L302 180UH 3225
R328 470
R327 4700
C330 470P B
R330 2200
Q305(B-25)
LPF
C334 1 F 3216
R338 27K
R339 6800
R337 10K 1/10W
mark : CAMERA REC mode
* : can not be measured

VC-84 BOARD (2/4)
CAM 2 (CP, ED, AW, EVR)

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.

VC-84 BOARD (CP, ED, EVR)



• **SIGNAL PATH**

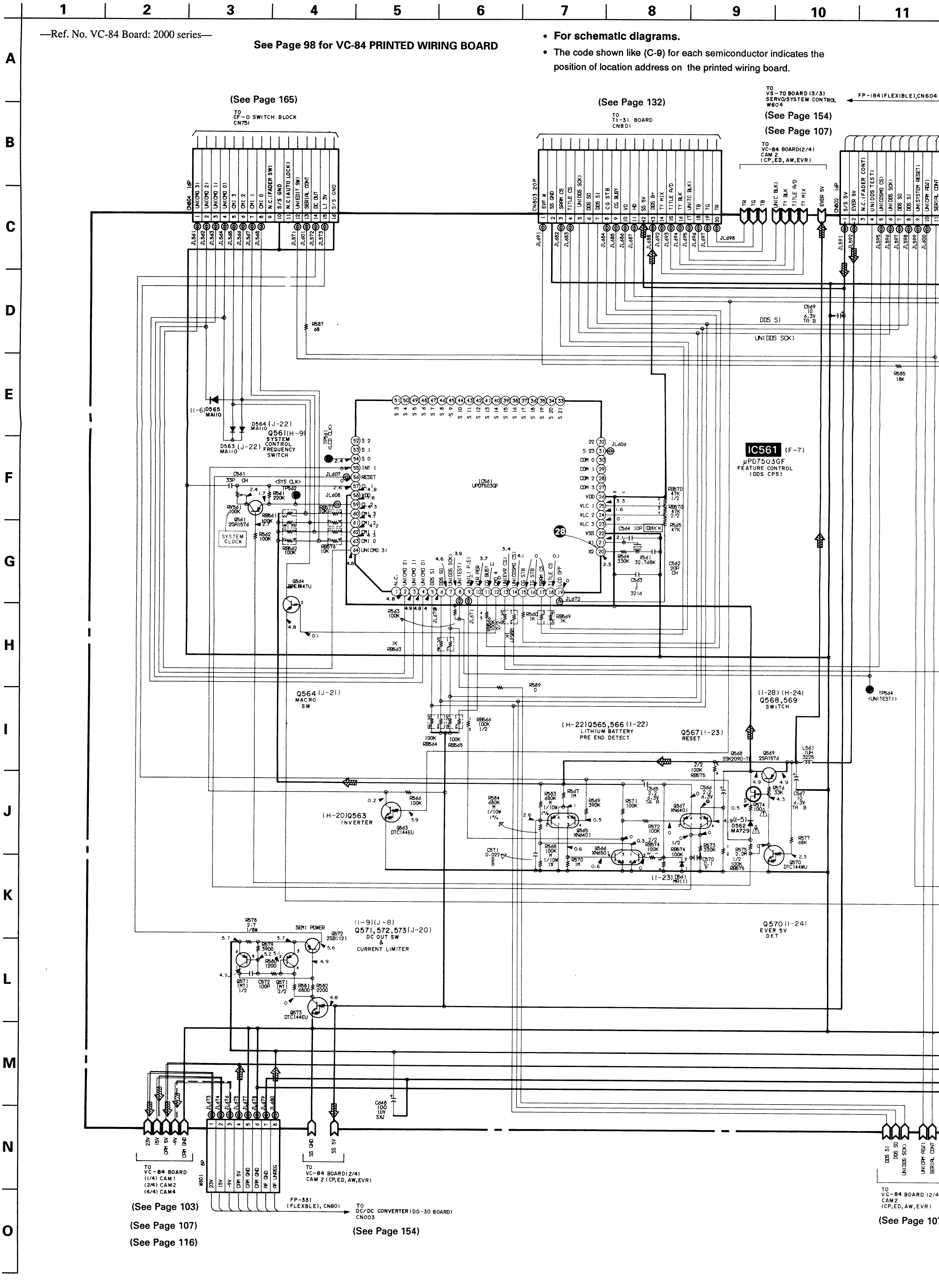
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	➾		
PB				

VC-84 (CAMERA) SCHEMATIC DIAGRAM

—Ref. No. VC-84 Board: 2000 series—

See Page 98 for VC-84 PRINTED WIRING BOARD

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.



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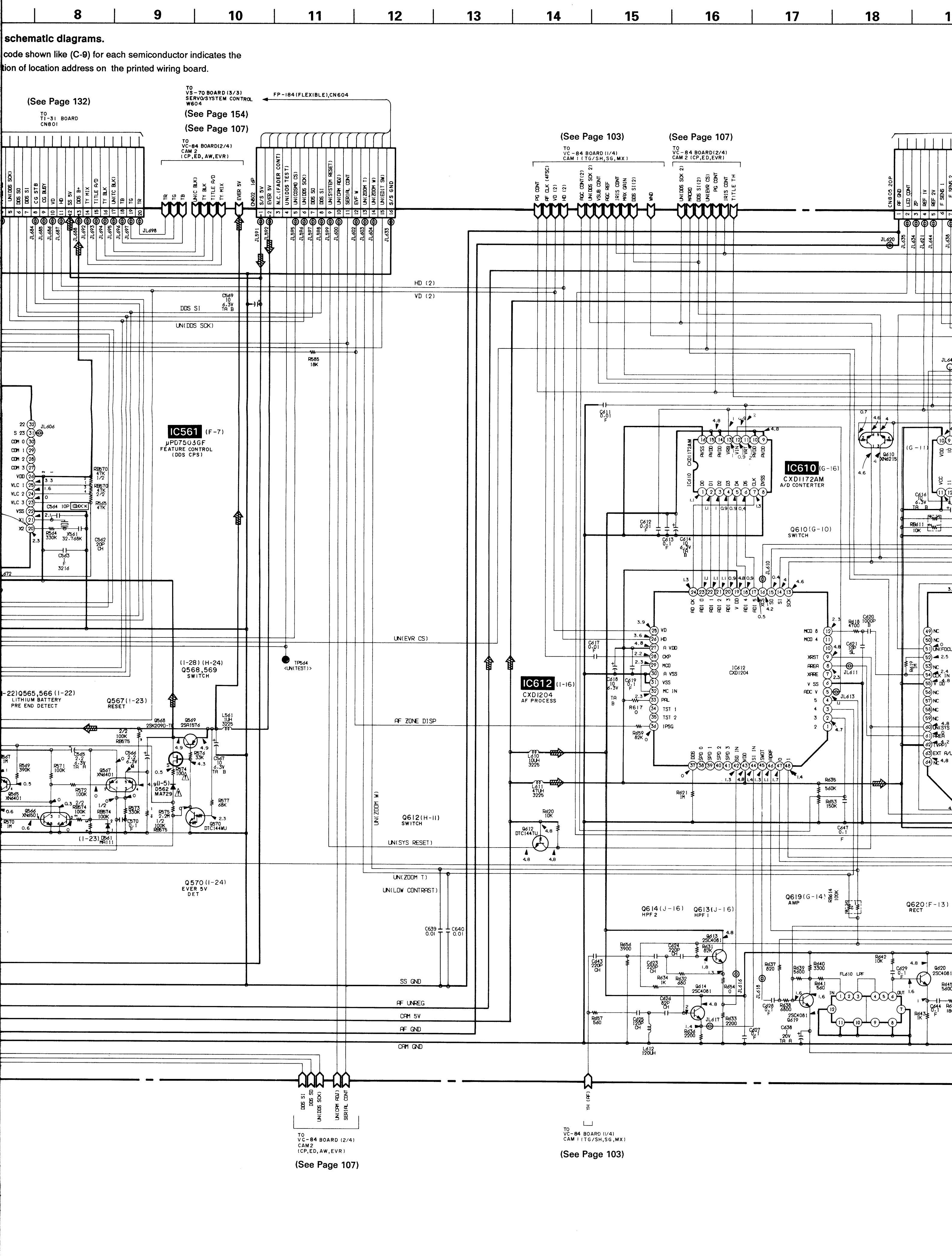
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
(See Page 165)
TO CF-O SWITCH BLOCK CN751
CN804 16P
UN(CMD 3)
UN(CMD 2)
UN(CMD 1)
UN(CMD 0)
CMI 3
CMI 2
CMI 1
CMI 0
N.C.(FADER SW)
S/S GND
N.C(AUTO LOCK)
UN(EDIT SW)
SERIAL CONT
DC OUT
LI 3V
S/S GND
(See Page 132)
TO TI-31 BOARD CN801
CN803 20P
EVF W
SS GND
SRAM CS
TITLE CS
UN(DDS SCK)
DDS SO
DDS SI
CG STB
CG BUSY
VD
HD
SS 5V
DDS B+
TY MIX
TITLE R/D
TY BLK
UN(TC BLK)
TB
TG
TR
TO VS-70 BOARD (3/3) SERVO/SYSTEM CONTROL W604
FP-184(FLEXIBLE),CN604
(See Page 154)
(See Page 107)
TO VC-84 BOARD(2/4) CAM 2 (CP,ED,AW,EVR)
EVER 5V
CN802 16P
S/S 5V
N.C.(FADER CONT)
UN(DDS TEST)
UN(CDSMO CS)
UN(DDS SCK)
DDS SO
DDS SI
UN(SYSTEM RESET)
UN(CPH RDU)
SERIAL CONT
C569 10 6.3V TA B
DDS SI
UN(DDS SCK)
R585 18K
R587 68
(I-6)D565 MA110
D564(J-22) MA110
Q561(H-9) SYSTEM CONTROL FREQUENCY SWITCH
D563(J-22) MA110
SYSTEM CLOCK
IC561 UPD7503GF
IC561 (F-7)
μPD7503GF
FEATURE CONTROL (DDS CPS)
X561 32.768K
TP564 <UN(TEST)>
Q564(J-21) MACRO SW
(H-22)Q565,566(I-22) LITHIUM BATTERY PRE END DETECT
Q567(I-23) RESET
(I-28)(H-24) Q568,569 SWITCH
(H-20)Q563 INVERTER
Q570(I-24) EVER 5V DET
(I-9)(J-8) Q571,572,573(J-20) DC OUT SW & CURRENT LIMITER
SEMI POWER
C648 100 10V SXJ
23V
15V
-9V
CPH 5V
CPH GND
PF GND
PF UNREG
SS GND
SS 5V
TO VC-84 BOARD (1/4) CAM 1 (2/4) CAM 2 (4/4) CAM 4
(See Page 103)
(See Page 107)
(See Page 116)
TO VC-84 BOARD(2/4) CAM 2 (CP,ED,AW,EVR)
FP-331 (FLEXBLE), CN801
TO DC/DC CONVERTER (DD-30 BOARD) CN003
(See Page 154)
TO VC-84 BOARD (2/4) CAM2 (CP,ED,AW,EVR)
(See Page 107)

schematic diagrams.

code shown like (C-9) for each semiconductor indicates the

tion of location address on the printed wiring board.


8
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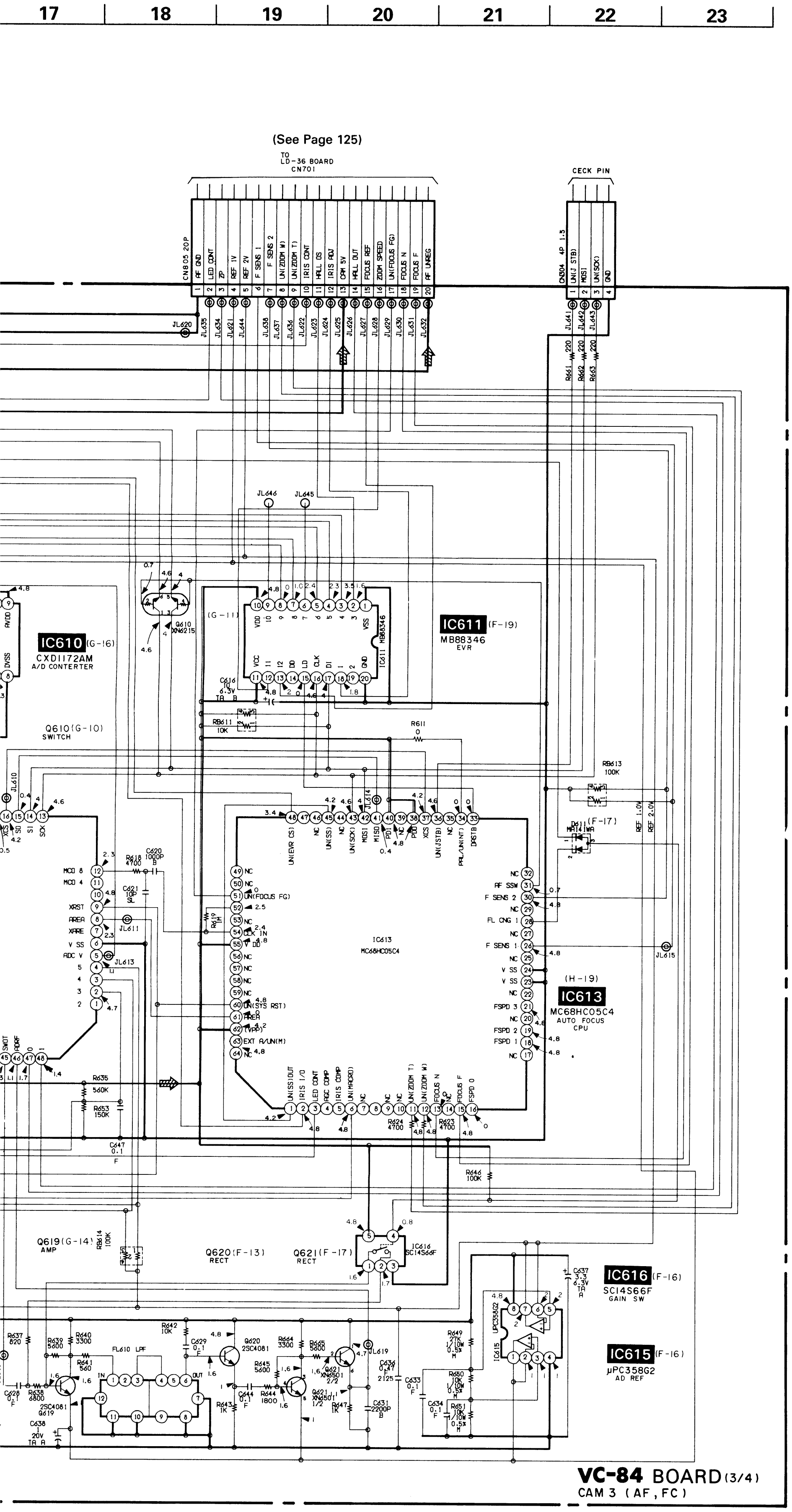
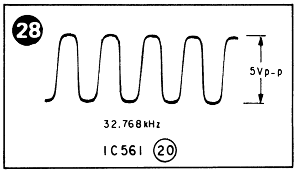
13
14
15
16
17
18
(See Page 132)
TO TI-31 BOARD CN801
TO VS-70 BOARD (3/3) SERVO/SYSTEM CONTROL W604
(See Page 154)
FP-184 (FLEXIBLE), CN604
(See Page 107)
TO VC-84 BOARD (2/4) CAM 2 (CP, ED, AW, EVR)
(See Page 103)
TO VC-84 BOARD (1/4) CAM 1 (TG/SH, SG, MX)
(See Page 107)
TO VC-84 BOARD (2/4) CAM 2 (CP, ED, EVR)
CN802 16P
CN805 20P
HD (2)
VD (2)
DDS SI
UN(DDS SCK)
UN(EVR CS)
AF ZONE DISP
UN(SYS RESET)
UN(ZOOM T)
UN(LOW CONTRAST)
UN(ZOOM W)
SS GND
AF UNREG
CAM 5V
AF GND
CAM GND
IC561 (F-7)
µPD7503GF
FEATURE CONTROL (DDS CPS)
IC610 (G-16)
CXD1172AM
A/D CONVERTER
IC612 (I-16)
CXD1204
AF PROCESS
Q610 (G-10) SWITCH
Q612 (H-11) SWITCH
Q614 (J-16) HPF 2
Q613 (J-16) HPF 1
Q619 (G-14) AMP
Q620 (F-13) RECT
FL610 LPF
(I-28) (H-24) Q568,569 SWITCH
Q565,566 (I-22) LITHIUM BATTERY PRE END DETECT
Q567 (I-23) RESET
Q570 (I-24) EVER 5V DET
TP564 <UN(TEST)>
DDS SI
DDS SCK
UN(DDS SCK)
UN(CAM ADJ)
SERIAL CONT
YH (AF)
TO VC-84 BOARD (2/4) CAM2 (CP, ED, AW, EVR)
(See Page 107)
TO VC-84 BOARD (1/4) CAM 1 (TG/SH, SG, MX)
(See Page 103)



17
18
19
20
21
22
23
(See Page 125)
TO LD-36 BOARD CN701
CECK PIN
CN805 20P
AF GND
LED CONT
ZP
REF 1V
REF 2V
F SENS 1
F SENS 2
UN(ZOOM W)
UN(ZOOM T)
IRIS CONT
HALL OS
IRIS ADJ
CAM 5V
HALL OUT
FOCUS REF
ZOOM SPEED
UN(FOCUS FG)
FOCUS N
FOCUS F
AF UNREG
CN504 4P 1.5
UN(J STB)
MOSI
UN(SCK)
GND
R661 220
R662 220
R663 220
JL620
JL646
JL645
IC610 (G-16)
CXD1172AM
A/D CONTERTER
Q610 (G-10)
SWITCH
Q610 XN6215
IC611 (F-19)
MB88346
EVR
(G-11)
C616 10 6.3V TA B
RB611 10K
R611 0
RB613 100K
D611 (F-17) MA141WA
REF 1.0V
REF 2.0V
R618 4700
C620 1000P B
C621 10P SL
JL611
JL613
JL615
JL610
IC613 MC68HC05C4
IC613 (H-19)
MC68HC05C4
AUTO FOCUS CPU
UN(EVR CS)
MISO
MOSI
UN(JSTB)
PAL/UN(NT)
DRSTB
AF SSW
F SENS 2
FL CNG 1
F SENS 1
V SS
FSPD 3
FSPD 2
FSPD 1
UN(FOCUS FG)
CLK IN
UN(SYS RST)
EXT A/UN(M)
UN(SSI)OUT
IRIS 1/0
LED CONT
AGC COMP
IRIS COMP
UN(MACRO)
UN(ZOOM T)
UN(ZOOM W)
FOCUS N
FOCUS F
FSPD 0
R624 4700
R623 4700
R646 100K
R635 560K
R653 150K
C647 0.1 F
IC616 SC14S66F
Q619 (G-14) AMP
RB614 100K
Q620 (F-13) RECT
Q621 (F-17) RECT
C637 3.3 6.3V TA A
IC616 (F-16)
SC14S66F
GAIN SW
IC615 (F-16)
µPC358G2
AD REF
IC615 µPC358G2
R649 27K 1/10W 0.5% M
R650 10K 1/10W 0.5% M
R651 10K 1/10W 0.5% M
C633 0.1 F
C634 0.1 F
C631 2200P B
C636 0.47 2125
R637 820
R639 5600
R640 3300
R641 560
R638 6800
C628 0.1
2SC4081 Q619
C638 1 20V TA A
FL610 LPF
IN
OUT
R642 10K
C629 0.1 F
Q620 2SC4081
R645 5600
C644 0.1 F
R644 1800
R643 1K
R664 3300
R665 5600
Q621 XN4501 2/2
Q621 XN4501 1/2
R647 1K
JL619

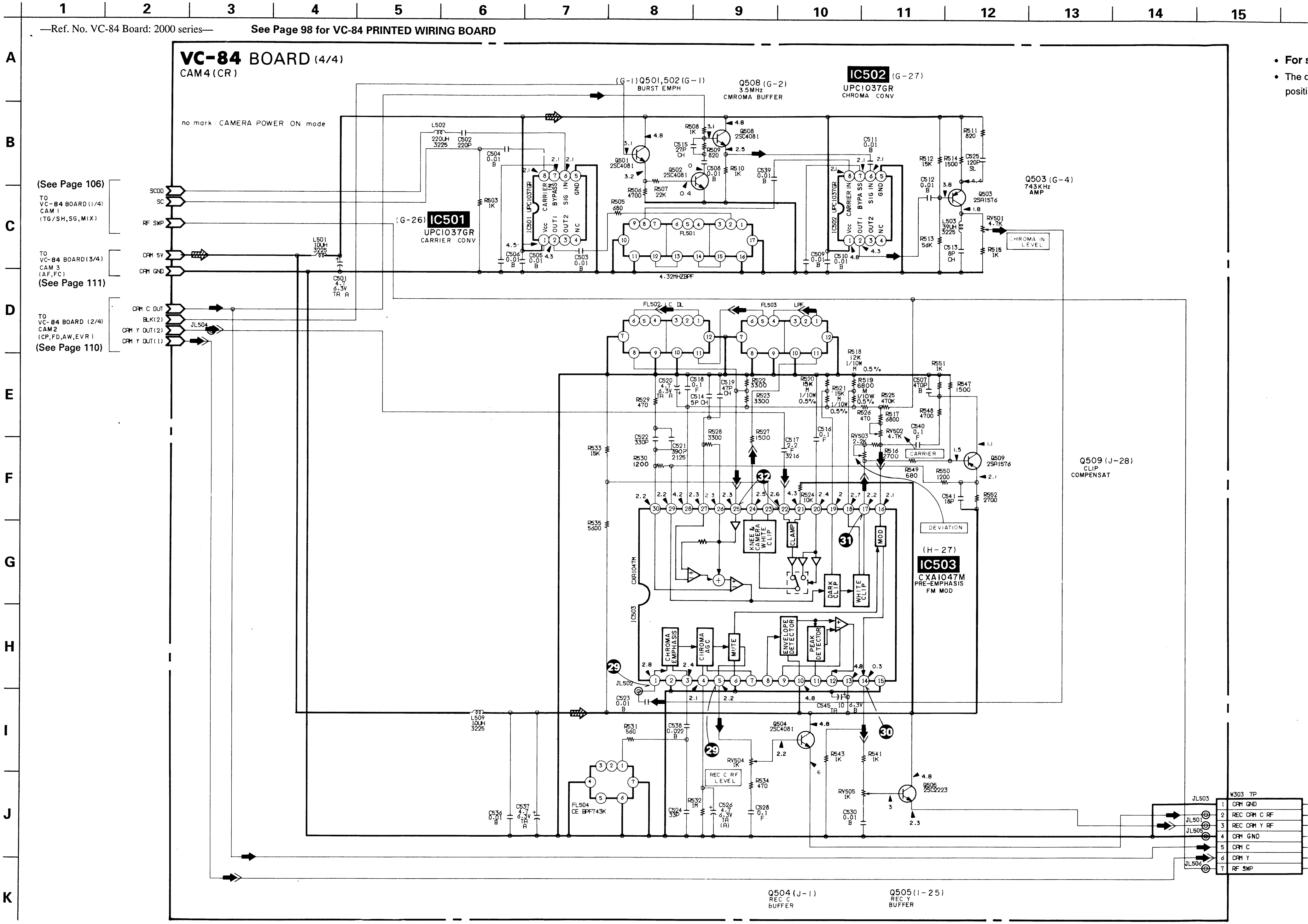
VC-84 BOARD (3/4)
CAM 3 (AF, FC)

VC-84 BOARD (AF, FC)



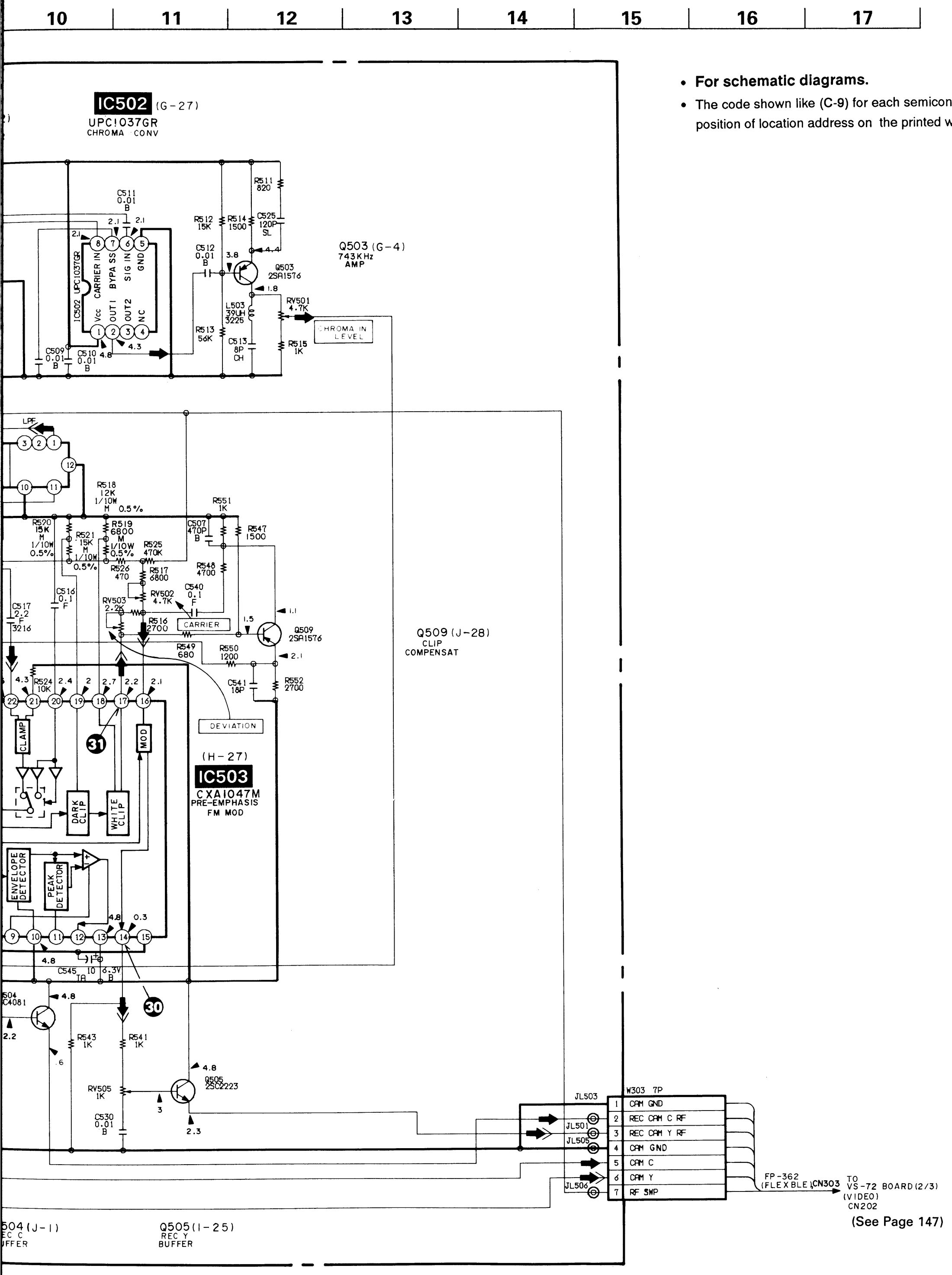
—Ref. No. VC-84 Board: 2000 series—

See Page 98 for VC-84 PRINTED WIRING BOARD


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J K
VC-84 BOARD (4/4)
CAM4(CR)
no mark : CAMERA POWER ON mode
(See Page 106)
TO VC-84 BOARD(1/4) CAM 1 (TG/SH,SG,MIX)
SCOO
SC
RF SWP
TO VC-84 BOARD(3/4) CAM 3 (AF,FC)
(See Page 111)
CAM 5V
CAM GND
TO VC-84 BOARD (2/4) CAM2 (CP,FD,AW,EVR)
(See Page 110)
CAM C OUT
BLK(2)
CAM Y OUT(2)
CAM Y OUT(1)
JL504
(G-1)Q501,502(G-1) BURST EMPH
Q508 (G-2) 3.5MHz CMROMA BUFFER
IC502 (G-27) UPC1037GR CHROMA CONV
(G-26) IC501 UPC1037GR CARRIER CONV
Q503 (G-4) 743KHz AMP
CHROMA IN LEVEL
FL501 4.32MHZBPF
FL502 LC DL
FL503 LPF
L501 10UH 3225
L502 220UH 3225
Q509 (J-28) CLIP COMPENSAT
(H-27) IC503 CXA1047M PRE-EMPHASIS FM MOD
KNEE & CAMERA WHITE CLIP
CLAMP
MOD
DARK CLIP
WHITE CLIP
CHROMA EMPHASIS
CHROMA AGC
MUTE
ENVELOPE DETECTOR
PEAK DETECTOR
CARRIER
DEVIATION
REC C RF LEVEL
FL504 CE BPF743K
L509 10UH 3225
JL502
JL503
JL501
JL505
JL506
W303 7P
1 CAM GND
2 REC CAM C RF
3 REC CAM Y RF
4 CAM GND
5 CAM C
6 CAM Y
7 RF SWP
Q504 (J-1) REC C BUFFER
Q505 (I-25) REC Y BUFFER
Q504 2SC4081
Q505 2SC2223
Q501 2SC4081
Q502 2SC4081
Q508 2SC4081
Q503 2SA1576
Q509 2SA1576
29
30
31
32

• For s

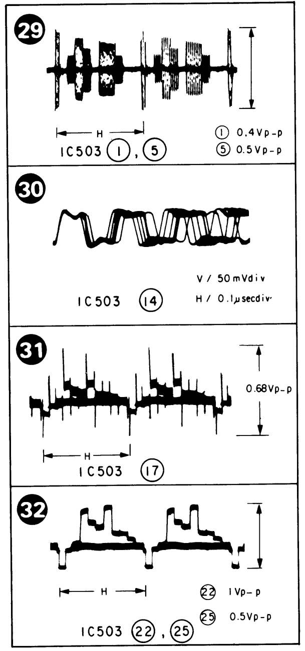
• The c
positi


10
11
12
13
14
15
16
17
IC502 (G-27)
UPC1037GR
CHROMA CONV
Q503 (G-4)
743KHz
AMP
Q503
2SA1576
CHROMA IN LEVEL
Q509 (J-28)
CLIP
COMPENSAT
Q509
2SA1576
CARRIER
DEVIATION
(H-27)
IC503
CXA1047M
PRE-EMPHASIS
FM MOD
CLAMP
MOD
DARK CLIP
WHITE CLIP
ENVELOPE DETECTOR
PEAK DETECTOR
LPF
Q505
2SC2223
W303 7P
1 CAM GND
2 REC CAM C RF
3 REC CAM Y RF
4 CAM GND
5 CAM C
6 CAM Y
7 RF SWP
JL503
JL501
JL505
JL506
FP-362 (FLEXIBLE)
CN303
TO VS-72 BOARD (2/3) (VIDEO) CN202
504 (J-1)
EC C
UFFER
Q505 (I-25)
REC Y
BUFFER

(See Page 147)

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.

VC-84 BOARD (CR)



• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	⇨		
PB				

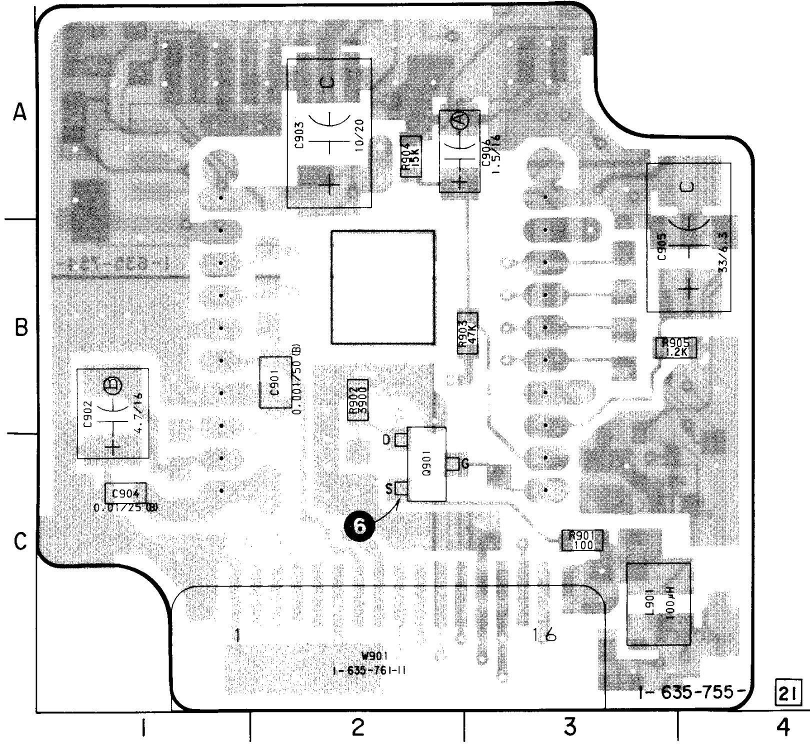
CD-48 (CCD IMAGER) PRINTED WIRING BOARD

—Ref. No. CD-48 Board: 1000 series—

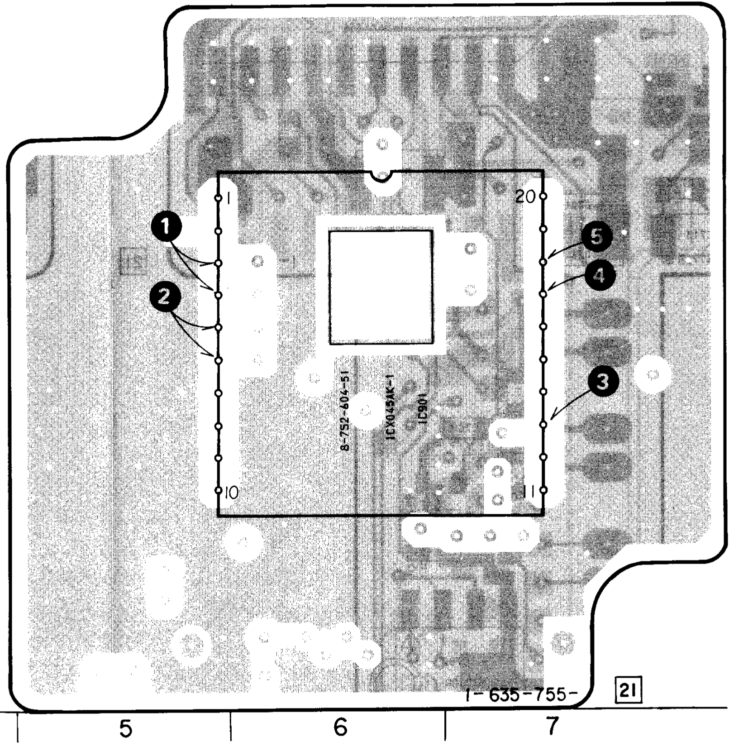
- **For printed wiring boards.**
- CD-48 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- Through hole (⊗) is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

CD-48 BOARD (COMPONENT SIDE)


A
B
C
C903
10/20
R904
15K
C906
1.5/16
C905
33/6.3
C901
0.001/50
R903
47K
R905
1.2K
C902
4.7/16
R902
3900
Q901
D
G
S
C904
0.01/25
6
R901
100
L901
100μH
1
16
W901
1-635-761-11
1-635-755-
21
1
2
3
4

CD-48 BOARD (CONDUCTOR SIDE)


1
2
3
4
5
1
10
20
11
8-752-604-51
ICX045AK-1
IC901
1-635-755-
21
5
6
7

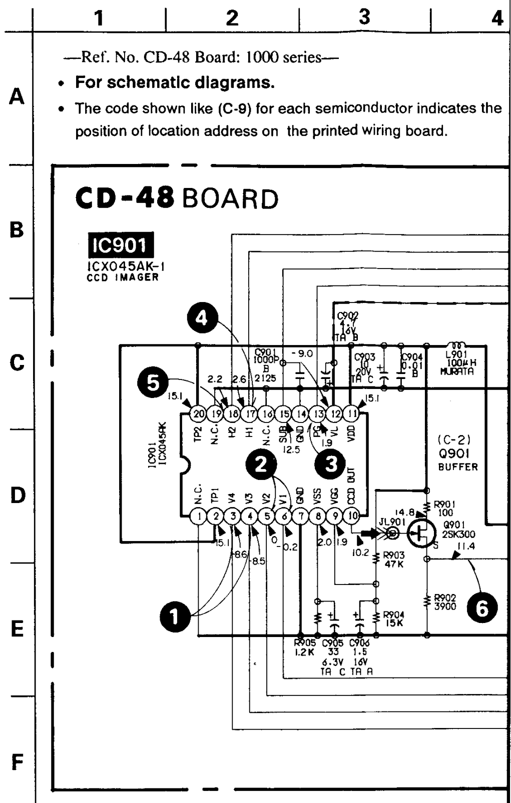
TRANSISTOR

Q901 8-765-420-06 TRANSISTOR 2SK300-3

CD-48 (CCD IMAGER) SCHEMATIC DIAGRAM

—Ref. No. CD-48 Board: 1000 series—

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.


1
2
3
4
A
B
C
D
E
F
CD-48 BOARD
IC901
ICX045AK-1
CCD IMAGER
1
2
3
4
5
6
TP2
N.C.
H2
H1
SUB
GND
PG
VL
VDD
N.C.
TP1
V4
V3
V2
V1
GND
VSS
VGG
CCD OUT
C901 1000P B
C902 1 16V TA B
C903 10 20V TA C
C904 0.01 B
L901 100μH MURATA
(C-2) Q901 BUFFER
R901 100
Q901 2SK300
JL901
R903 47K
R902 3900
R904 15K
R905 1.2K
C905 33 6.3V TA C
C906 1.5 16V TA A
15.1
2.2
2.6
2125
-9.0
12.5
1.9
14.8
11.4
10.2
-0.2
-8.5
-8.6
2.0

- **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC			➡≫	
PB				

G
H
I
J

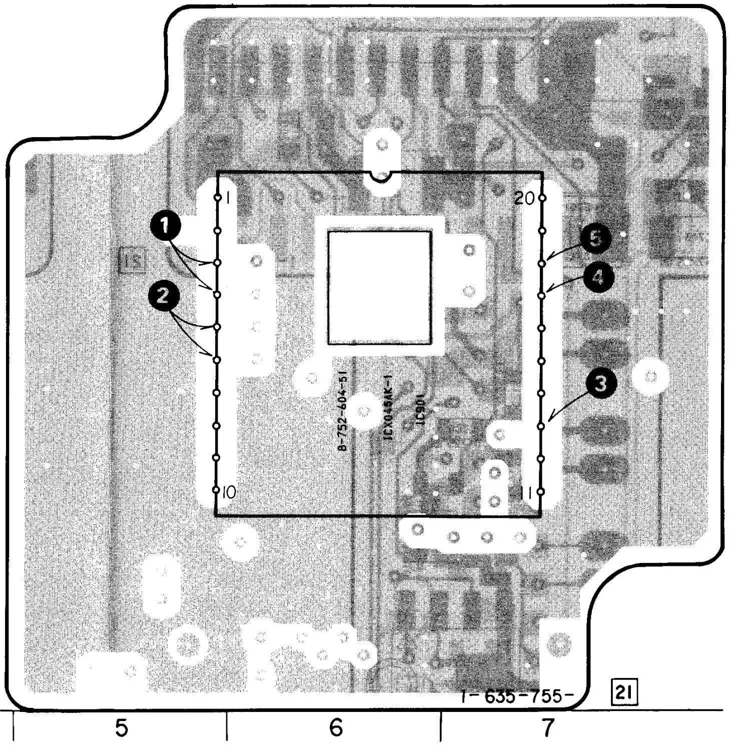
CAUTIONS FOR REPLACING THE CCD IMAGER

- IC901 is not mount on the CD-48 board, which has been supplied and mounted as the part for repair.
  When replacing the board, remove IC901 from the older board mount it on the new board.
- Perform always the whole adjustment of the camera block after replacing the CCD imager.
- Since the CCD imager may be broken by the static electricity on its structure, handle carefully like the MOS IC. Also, prevent the sensor from adhering a dust, and entering a strong light.

layers

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

CD-48 BOARD (CONDUCTOR SIDE)



1
2
3
4
5
1
20
10
11
B-752-604-51
ICX045AK-1
IC901
1-635-755-
21
5
6
7

CAUTIONS FOR REPLACING THE CCD IMAGER

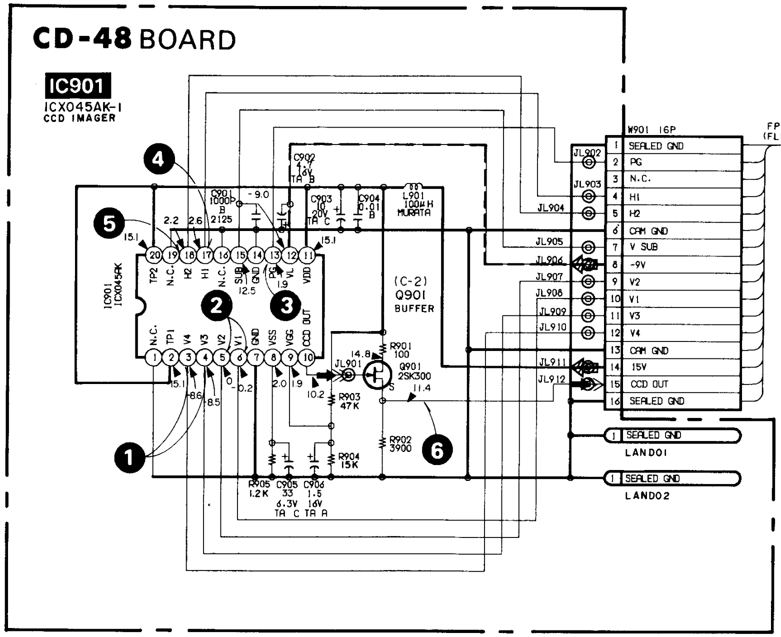
- IC901 is not mount on the CD-48 board, which has been supplied and mounted as the part for repair. When replacing the board, remove IC901 from the older board mount it on the new board.
- Perform always the whole adjustment of the camera block after replacing the CCD imager.
- Since the CCD imager may be broken by the static electricity on its structure, handle carefully like the MOS IC. Also, prevent the sensor from adhering a dust, and entering a strong light.

1 2 3 4 5 6 7 8 9 10

A B C D E F G H I J

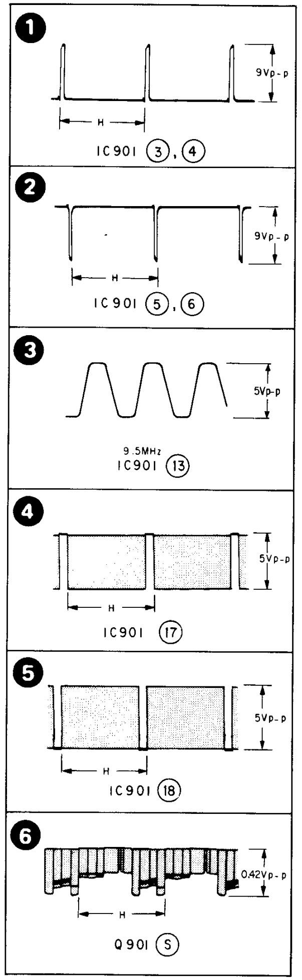
—Ref. No. CD-48 Board: 1000 series—

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.



CD-48 BOARD
IC901
ICX045AK-1
CCD IMAGER
IC901
ICX045AK
TP2
N.C.
H2
H1
N.C.
SUB
GND
PG
VL
VDD
N.C.
TP1
V4
V3
V2
V1
GND
VSS
VGG
CCD OUT
C901 1000P B
C902 4.7 16V TA B
C903 10 20V TA C
C904 0.01 B
L901 100μH MURATA
(C-2) Q901 BUFFER
Q901 2SK300
R901 100
R903 47K
R902 3900
R904 15K
R905 1.2K
C905 33 6.3V TA C
C906 1.5 16V TA A
JL901
JL902
JL903
JL904
JL905
JL906
JL907
JL908
JL909
JL910
JL911
JL912
W901 16P
SEALED GND
PG
N.C.
H1
H2
CAM GND
V SUB
-9V
V2
V1
V3
V4
CAM GND
15V
CCD OUT
SEALED GND
FP-333 (FLEXIBLE), CN901
TO VC-84 BOARD (1/4)
CAM 1 (TG/SH, SG, MX)
CN302
(See Page 103)
SEALED GND
LAND01
SEALED GND
LAND02
1
2
3
4
5
6
15.1
2.2
2.6
2.1
2.5
-9.0
12.5
1.9
15.1
8.6
8.5
0
0.2
2.0
1.9
10.2
14.8
11.4

CD-48 BOARD



1
9Vp-p
H
IC901 ③, ④
2
9Vp-p
H
IC901 ⑤, ⑥
3
5Vp-p
9.5MHz
IC901 ⑬
4
5Vp-p
H
IC901 ⑰
5
5Vp-p
H
IC901 ⑱
6
0.42Vp-p
H
Q901 Ⓢ

- SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC			➡	
PB				

DIODE

D701	8-719-404-46	DIODE MA110

IC

IC701	8-759-037-20	IC MPC1737M
IC702	8-759-100-94	IC UPC358G2
IC703	8-759-981-82	IC RC3414M

TRANSISTOR

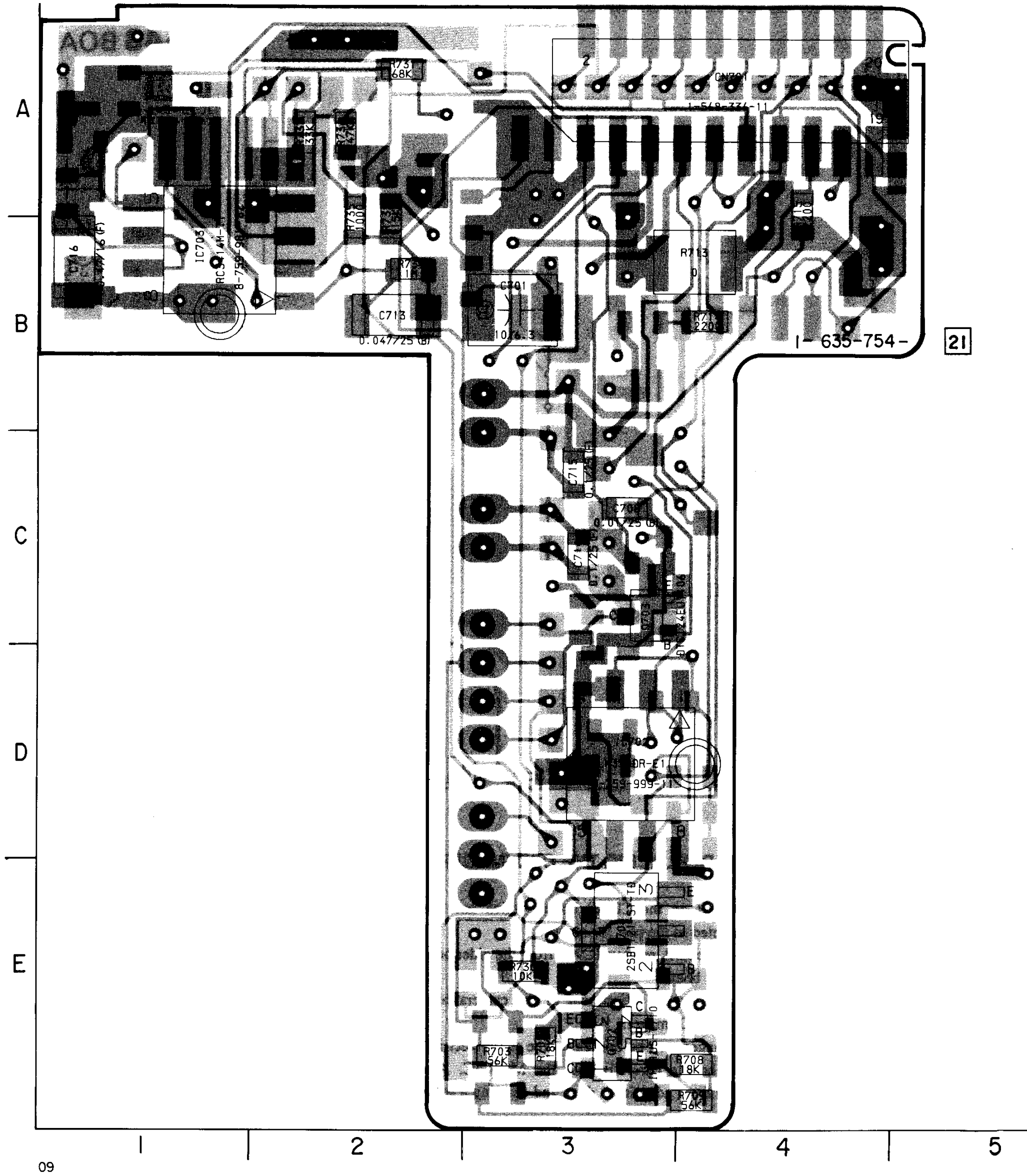
Q701	8-729-905-15	TRANSISTOR DTC144WU
Q702	8-729-920-39	TRANSISTOR IMT1US
Q703	8-729-905-61	TRANSISTOR DTC124EU
Q704	8-729-602-36	TRANSISTOR 2SA1602
Q706	8-729-805-25	TRANSISTOR 2SB1121
Q707	8-729-117-32	TRANSISTOR 2SC4177

LD-36 (IRIS/FOCUS/ZOOM MOTOR DRIVE) PRINTED WIRING BOARD

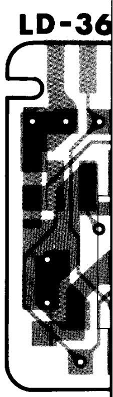
—Ref. No. LD-36 Board: 3000 series—

- **For printed wiring boards.**
- LD-36 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- Through hole (⊗) is omitted.

LD-36 BOARD (COMPONENT SIDE)


A
B
C
D
E
1
2
3
4
5
CN701
R713
C701
C713
0.047/25
R731
68K
R703
56K
R708
18K
R704
56K
R716
220
IC703
2SB1121
1-635-754-
21

09



ODE MA110

C MPC1737M
C UPC358G2
C RC3414M

STOR

ANSISTOR DTC144WU
ANSISTOR IMT1US
ANSISTOR DTC124EU
ANSISTOR 2SA1602
ANSISTOR 2SB1121

ANSISTOR 2SC4177

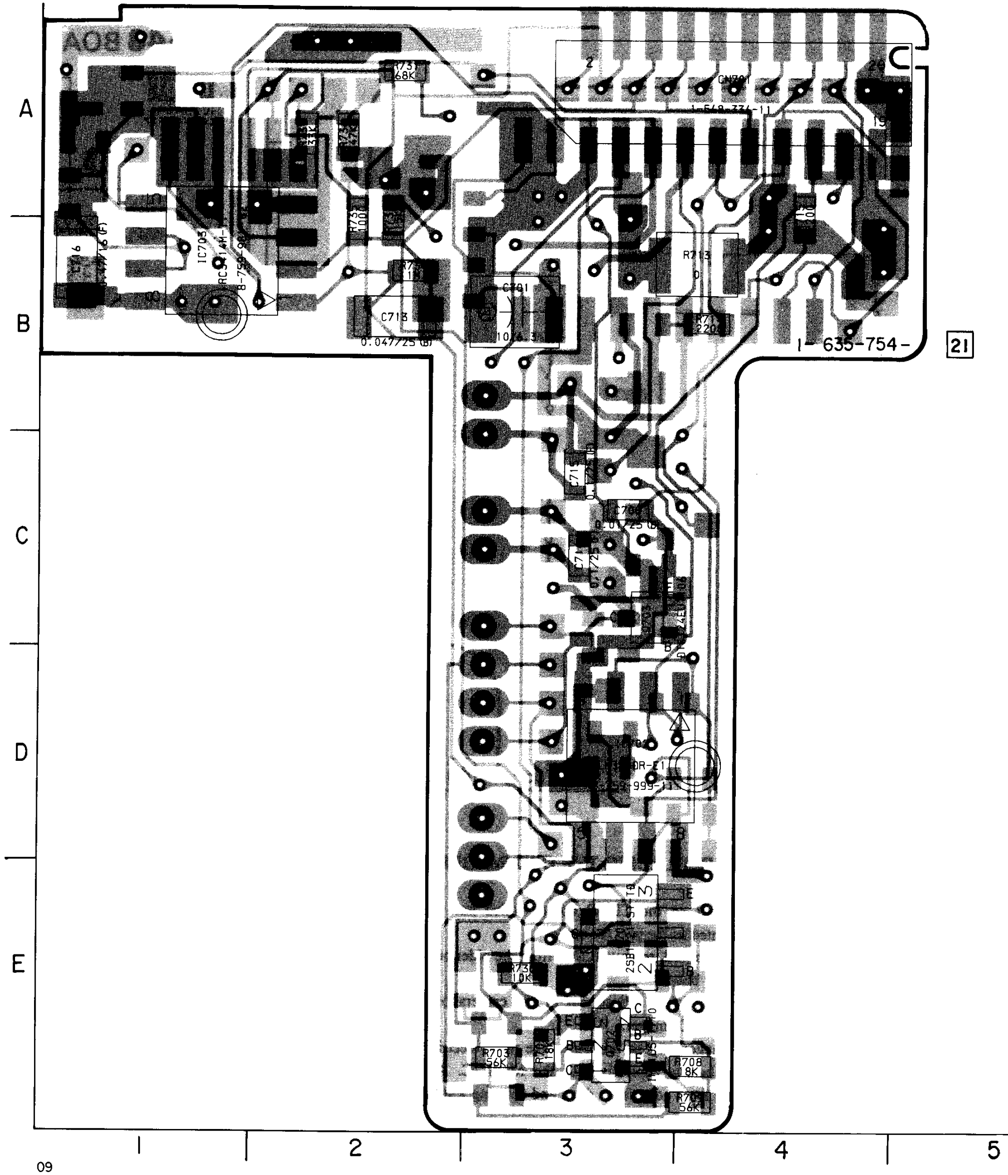
LD-36 (IRIS/FOCUS/ZOOM MOTOR DRIVE) PRINTED WIRING BOARD

—Ref. No. LD-36 Board: 3000 series—

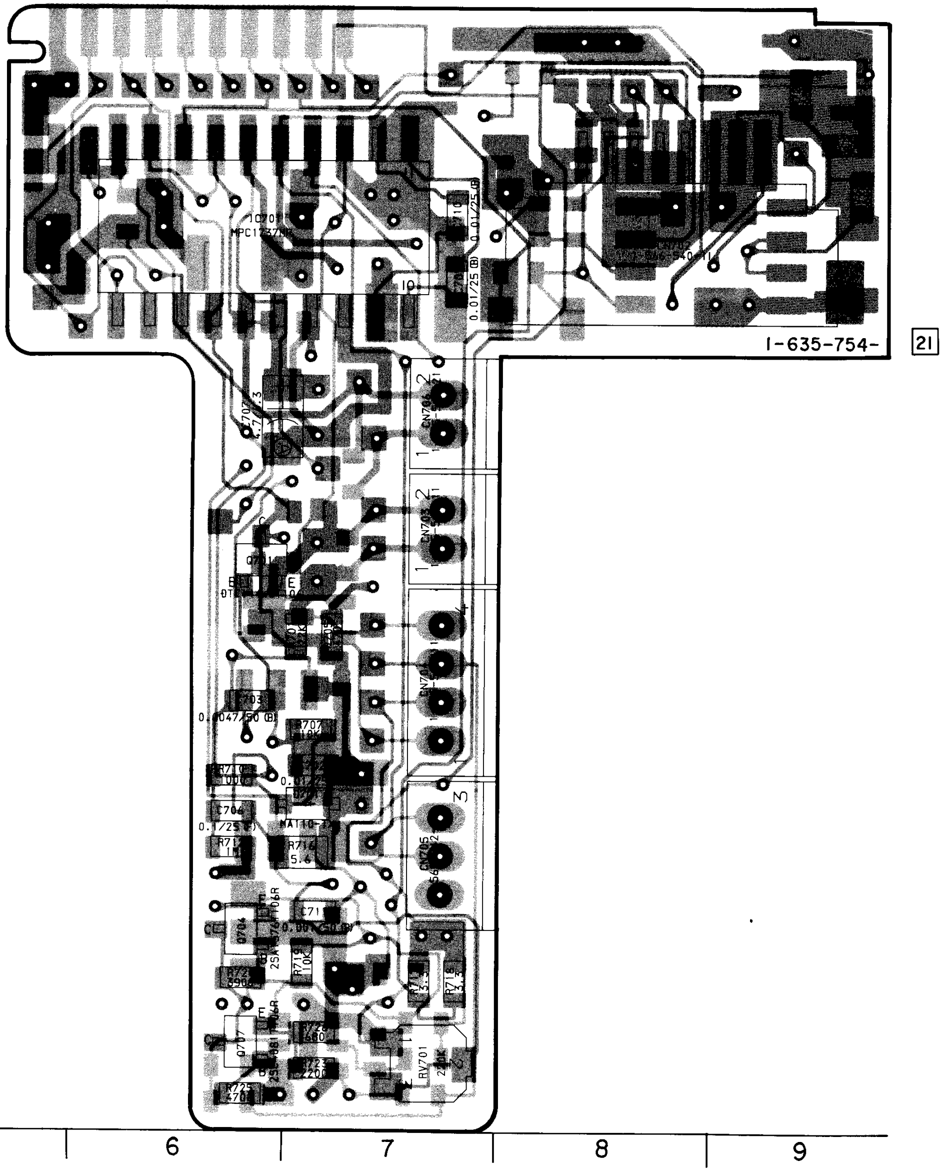
- **For printed wiring boards.**
- LD-36 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- Through hole (⊗) is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

LD-36 BOARD (COMPONENT SIDE)


A
B
C
D
E
1
2
3
4
5
09
CN701
1-568-334-11
IC703
C713
0.047/25 (B)
C701
R713
C705
C714
R703
56K
R708
8K
R705
56K
1-635-754-
21

LD-36 BOARD (CONDUCTOR SIDE)

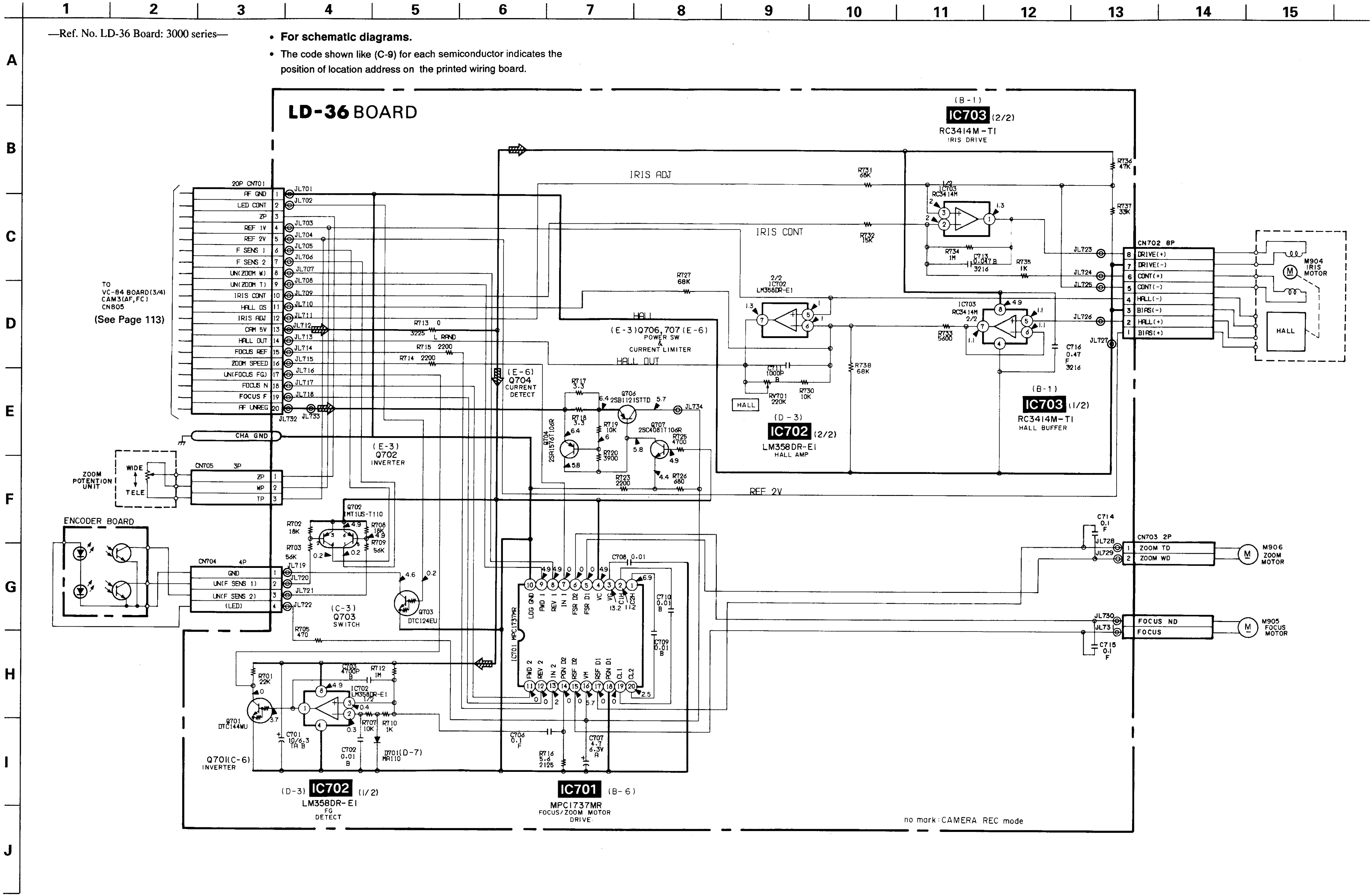

6
7
8
9
IC701
MPC1737M
CN702
CN703
CN704
CN705
Q701
C703
0.0047/50 (B)
R707
R710
C704
0.1/25 (B)
MA110
R716
5.6
R715
R719
10K
RV701
0.01/25 (B)
1-635-754-
21

CAMERA MOTOR **CAMERA MOTER**

LD-36 (IRIS/FOCUS/ZOOM MOTOR DRIVE) SCHEMATIC DIAGRAM

—Ref. No. LD-36 Board: 3000 series—

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
LD-36 BOARD
(B-1) IC703 (2/2) RC3414M-TI IRIS DRIVE
IRIS ADJ
IRIS CONT
HALL
HALL OUT
REF 2V
20P CN701
AF GND
LED CONT
ZP
REF 1V
REF 2V
F SENS 1
F SENS 2
UN(ZOOM W)
UN(ZOOM T)
IRIS CONT
HALL OS
IRIS ADJ
CAM 5V
HALL OUT
FOCUS REF
ZOOM SPEED
UN(FOCUS FG)
FOCUS N
FOCUS F
AF UNREG
CHA GND
TO VC-84 BOARD(3/4) CAM3(AF,FC) CN805
(See Page 113)
ZOOM POTENTION UNIT
WIDE
TELE
CN705 3P
ZP
WP
TP
ENCODER BOARD
CN704 4P
GND
UN(F SENS 1)
UN(F SENS 2)
(LED)
(E-3) Q702 INVERTER
(E-6) Q704 CURRENT DETECT
(E-3) Q706, 707 (E-6) POWER SW & CURRENT LIMITER
Q706 2SB1121STTD
Q707 2SC4081T106R
Q704 2SA1576T106R
Q702 IMT1US-T110
(C-3) Q703 SWITCH
Q703 DTC124EU
Q701 DTC144WU
Q701(C-6) INVERTER
D701(D-7) MA110
2/2 IC702 LM358DR-E1
(D-3) IC702 (2/2) LM358DR-E1 HALL AMP
(B-1) IC703 (1/2) RC3414M-TI HALL BUFFER
(D-3) IC702 (1/2) LM358DR-E1 FG DETECT
IC701 (B-6) MPC1737MR FOCUS/ZOOM MOTOR DRIVE
IC701 MPC1737MR
LOG GND
FWD 1
REV 1
IN 1
FSR D2
FSR D1
VC
FWD 2
REV 2
IN 2
PGN D2
RSF D2
VM
RSF D1
PGN D1
CL1
CL2
CN702 8P
DRIVE(+)
DRIVE(-)
CONT(+)
CONT(-)
HALL(-)
BIAS(-)
HALL(+)
BIAS(+)
M904 IRIS MOTOR
HALL
CN703 2P
ZOOM TD
ZOOM WD
M906 ZOOM MOTOR
FOCUS ND
FOCUS
M905 FOCUS MOTOR
R731 68K
R732 15K
R734 1M
C713 0.047 B 3216
R735 1K
R736 47K
R737 33K
R727 68K
R733 5600
C716 0.47 F 3216
R738 68K
C711 1000P B
RV701 220K
R730 10K
R713 0 3225 L RAND
R715 2200
R714 2200
R717 3.3
R718 3.3
R719 10K
R720 3900
R723 2200
R725 4700
R726 680
R702 18K
R703 56K
R708 18K
R709 56K
R705 470
R701 22K
C703 4700P B
R712 1M
R707 10K
R710 1K
C701 10/6.3 TA B
C702 0.01 B
C706 0.1 F
R716 5.6 2125
C707 4.7 6.3V A
C708 0.01
C710 0.01 B
C709 0.01 B
C714 0.1 F
C715 0.1 F
JL701
JL702
JL703
JL704
JL705
JL706
JL707
JL708
JL709
JL710
JL711
JL712
JL713
JL714
JL715
JL716
JL717
JL718
JL719
JL720
JL721
JL722
JL723
JL724
JL725
JL726
JL727
JL728
JL729
JL730
JL731
JL732
JL733
JL734
no mark: CAMERA REC mode

TI-31 (DIGITAL TITLER) PRINTED WIRING BOARD
—Ref. No. TI-31 Board: 4000 series—

- **For printed wiring boards.**
- TI-31 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- Through hole (⊗) is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

DIODE

D801	8-713-300-88	DIODE 1T33C-01

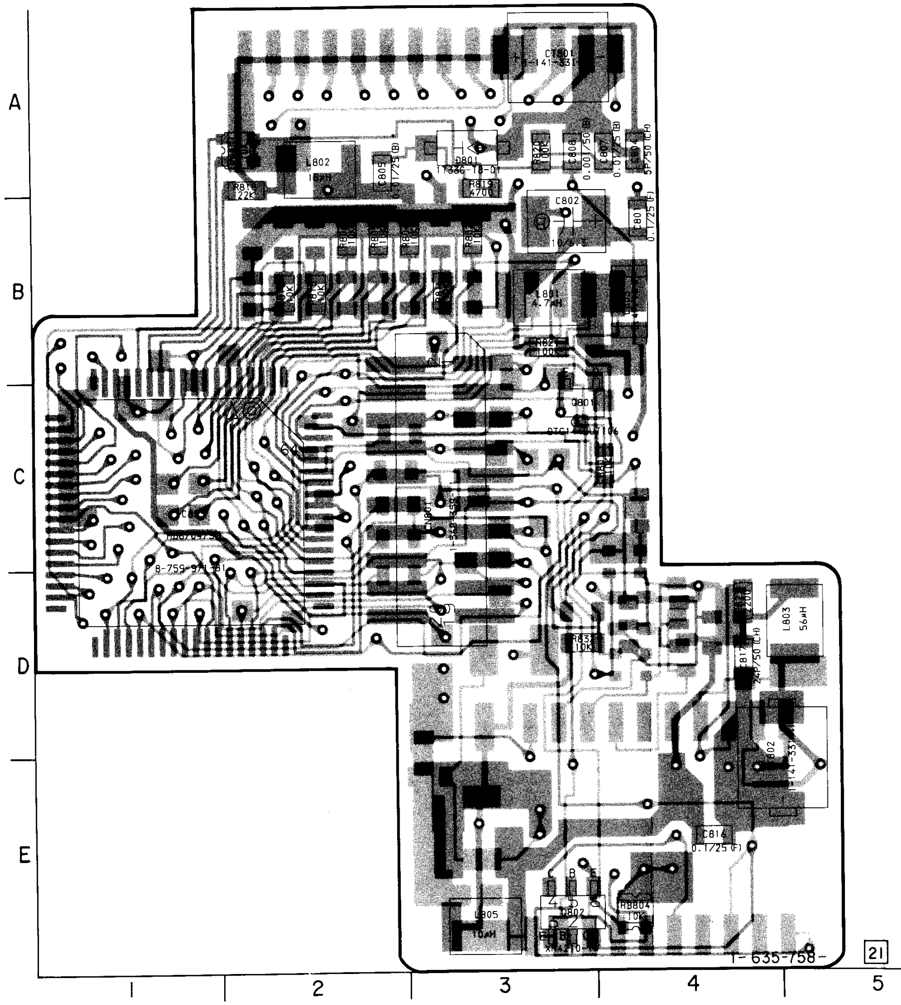
IC

IC801	8-759-979-96	IC MB8464A-15LLPF
IC802	8-759-150-75	IC UPD6145G-621
IC803	8-759-971-81	IC MB670479U

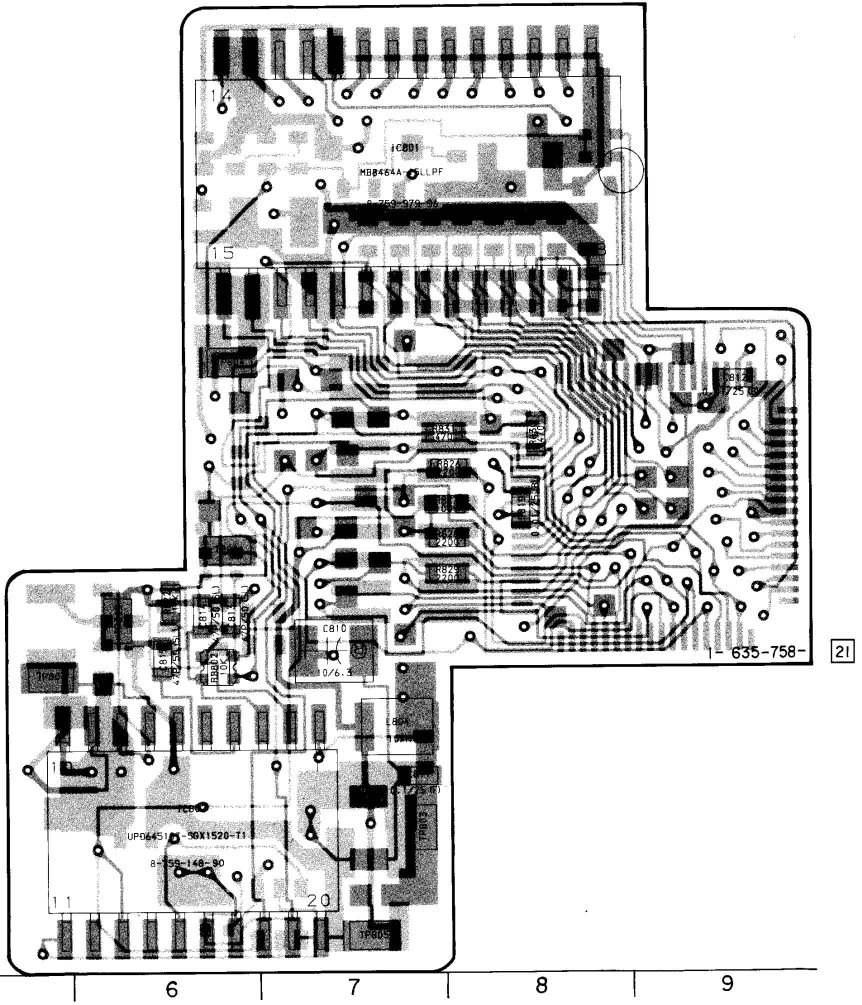
TRANSISTOR

Q801	8-729-905-18	TRANSISTOR DTC144EU
Q802	8-729-403-24	TRANSISTOR XN4210

TI-31 BOARD (COMPONENT SIDE)


A
B
C
D
E
1
2
3
4
5
CT801
L802
D801
1T33C-01
R813 470
C802
L801 4.7μH
Q801
DTC144EU
8-759-971-81
R831 10K
L803 56μH
C817
CT802
C814 0.1/25(F)
L805 10μH
Q802 XN4210
RB804 10K
1-635-758-
21

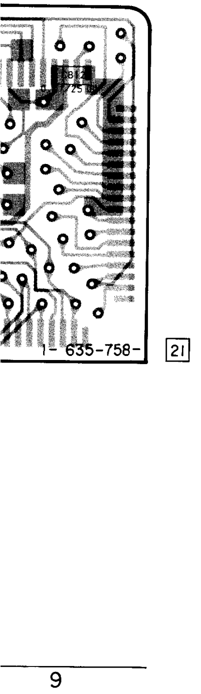
TI-31 BOARD (CONDUCTOR SIDE)

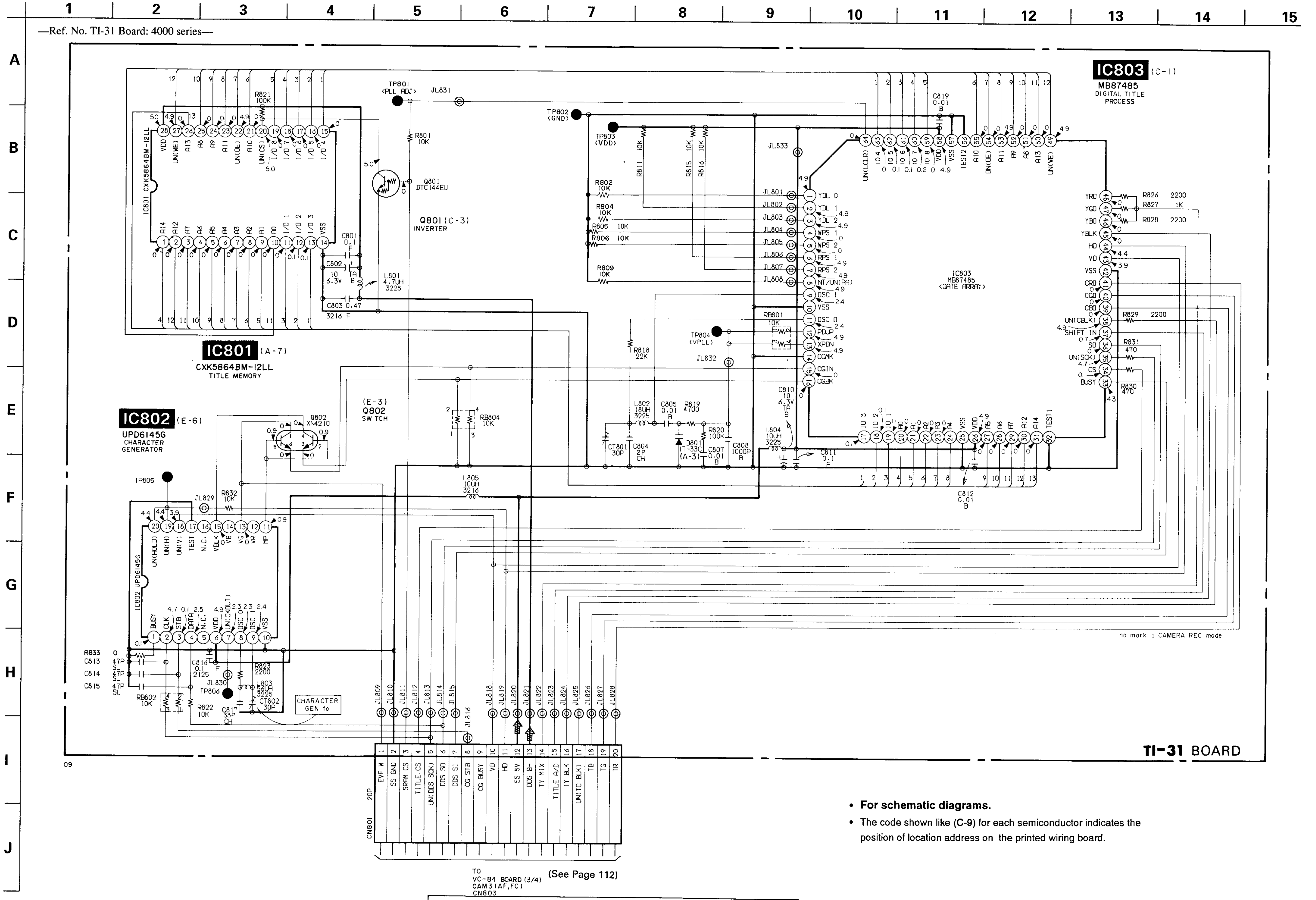

IC801
MB8464A-15LLPF
8-759-979-96
14
15
C812
R831 470
C810 10/6.3
L804 10μH
UPD6451
8-759-148-90
11
20
TP805
TP803
1-635-758-
21
6
7
8
9

09

TI-31 (DIGITAL TITLER) SCHEMATIC DIAGRAM

—Ref. No. TI-31 Board: 4000 series—


1-635-758-
21
9


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
IC801 (A-7)
CXK5864BM-12LL
TITLE MEMORY
IC802 (E-6)
UPD6145G
CHARACTER GENERATOR
IC803 (C-1)
MB87485
DIGITAL TITLE PROCESS
IC803
MB87485
<GATE ARRAY>
Q801 (C-3)
INVERTER
Q801
DTC144EU
(E-3)
Q802
SWITCH
Q802
XN4210
TP801
<PLL ADJ>
TP802
<GND>
TP803
<VDD>
TP804
<VPLL>
TP805
TP806
JL831
JL833
JL832
JL829
JL830
R821 100K
R801 10K
C801 0.1 F
C802 10 6.3V TA B
L801 4.7UH 3225
C803 0.47 3216 F
R802 10K
R804 10K
R805 10K
R806 10K
R809 10K
R811 10K
R815 10K
R816 10K
RB801 10K
R818 22K
L802 18UH 3225
C805 0.01 B
R819 4700
R820 100K
D801 1T-33C (A-3)
C801 30P
C804 2P CH
C807 0.01 B
C808 1000P B
C810 10 6.3V TA B
L804 10UH 3225
C811 0.1 F
C812 0.01 B
C819 0.01 B
RB804 10K
L805 10UH 3216
R826 2200
R827 1K
R828 2200
R829 2200
R831 470
R830 470
R832 10K
R833 0
C813 47P SL
C814 47P SL
C815 47P SL
RB802 10K
C816 0.1 F 2125
R822 10K
C817 33P CH
R823 2200
L803 680UH 3225
CT802 30P
CHARACTER GEN fo
JL801
JL802
JL803
JL804
JL805
JL806
JL807
JL808
JL809
JL810
JL811
JL812
JL813
JL814
JL815
JL816
JL818
JL819
JL820
JL821
JL822
JL823
JL824
JL825
JL826
JL827
JL828
YDL 0
YDL 1
YDL 2
WPS 1
WPS 2
RPS 1
RPS 2
NT/UN(PA)
OSC 1
VSS
OSC 0
PDUP
XPDN
CGMK
CGIN
CGBK
YRO
YGO
YBO
YBLK
HD
VD
VSS
CRO
CGO
CBO
UN(CBLK)
SHIFT IN
SO
UN(SCK)
CS
BUSY
UN(CLR)
VDD
VSS
TEST2
A10
UN(OE)
A11
A9
A8
A13
UN(WE)
VSS
VDD
A5
A6
A7
A12
A14
TEST1
UN(HOLD)
UN(H)
UN(V)
TEST
N.C.
VBLK
VB
VG
VR
MP
BUSY
CLK
STB
DATA
N.C.
VDD
UN(CKOUT)
OSC 0
OSC 1
VSS
IC801 CXK5864BM-12LL
IC802 UPD6145G
no mark : CAMERA REC mode
TI-31 BOARD
CN801 20P
EVF W
SS GND
SRAM CS
TITLE CS
UN(DDS SCK)
DDS SO
DDS SI
CG STB
CG BUSY
VD
HD
SS 5V
DDS B+
TY MIX
TITLE A/D
TY BLK
UN(TC BLK)
TB
TG
TR
TO
VC-84 BOARD (3/4)
CAM3 (AF,FC)
CN803
(See Page 112)

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.

DIODE

D201	8-719-800-76	DIODE 1SS226

TRANSISTOR

Q201	8-729-100-66	TRANSISTOR 2SC1623-L6
Q202	8-729-100-66	TRANSISTOR 2SC1623-L6
Q203	8-729-100-66	TRANSISTOR 2SC1623-L6
Q204	8-729-100-66	TRANSISTOR 2SC1623-L6
Q205	8-729-100-66	TRANSISTOR 2SC1623-L6
Q206	8-729-100-66	TRANSISTOR 2SC1623-L6
Q207	8-729-100-66	TRANSISTOR 2SC1623-L6
Q208	8-729-100-66	TRANSISTOR 2SC1623-L6

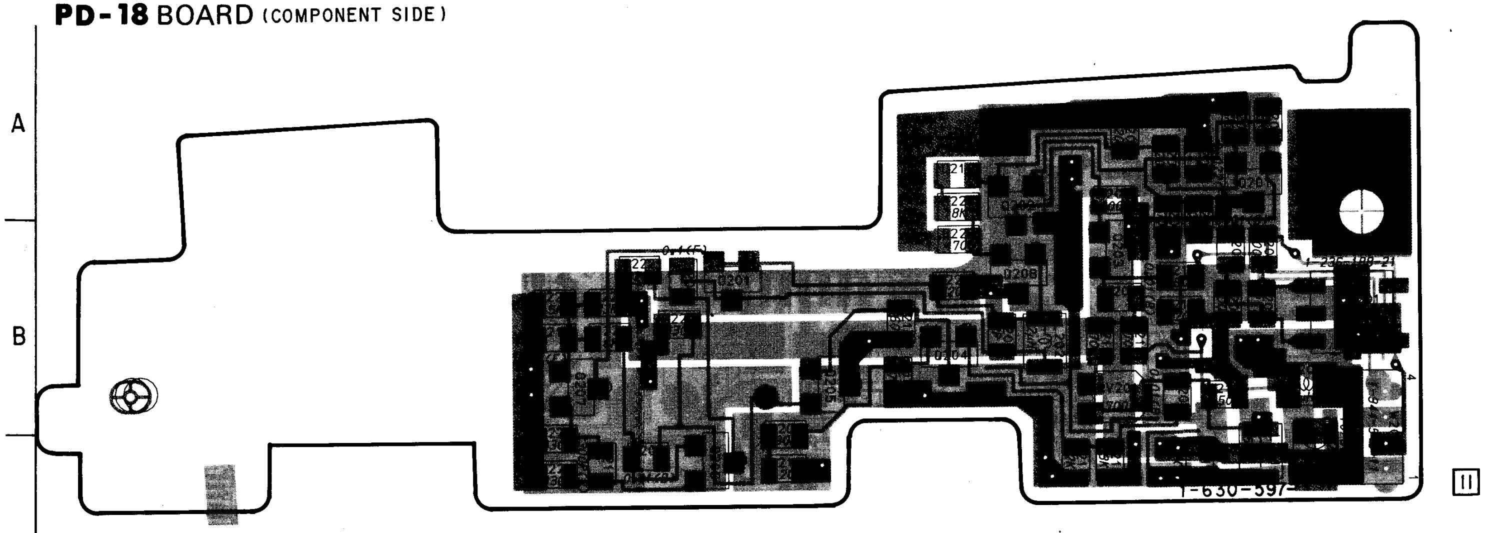
PD-18 (CHROMA NOISE REDUCTION) PRINTED WIRING BOARDS

— Ref. No. PD-18 BOARD: 4000 series —

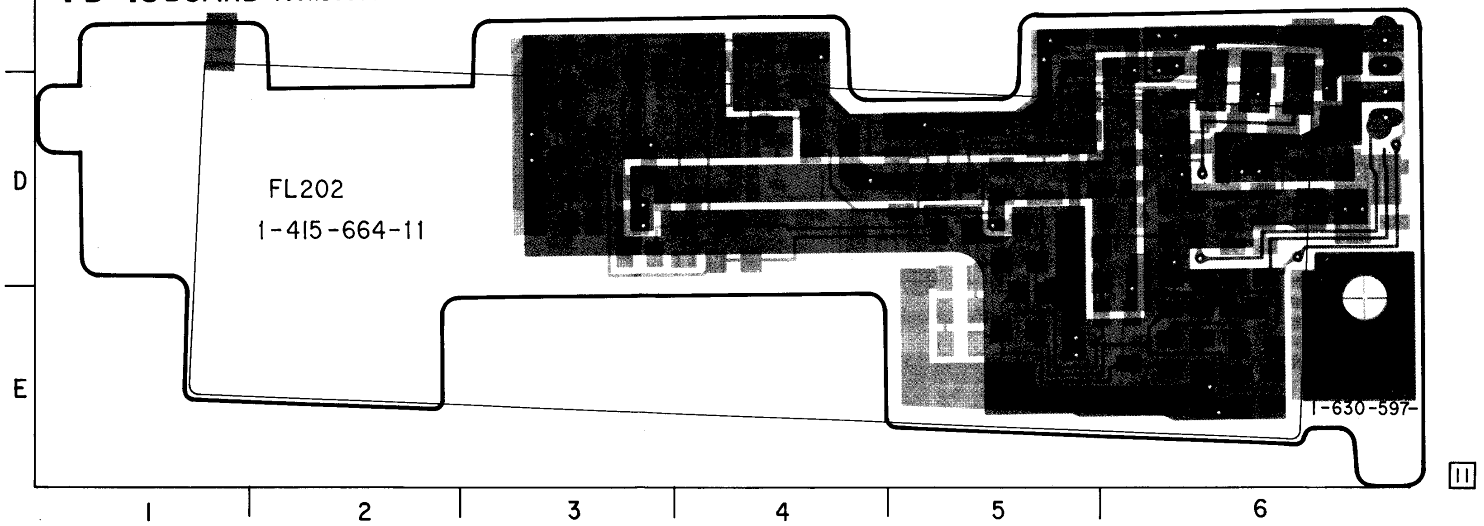
- **For printed wiring boards.**
- Through hole (⊗) is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

PD-18 BOARD (COMPONENT SIDE)


A
B
C
D201
D208
1-630-597-
11

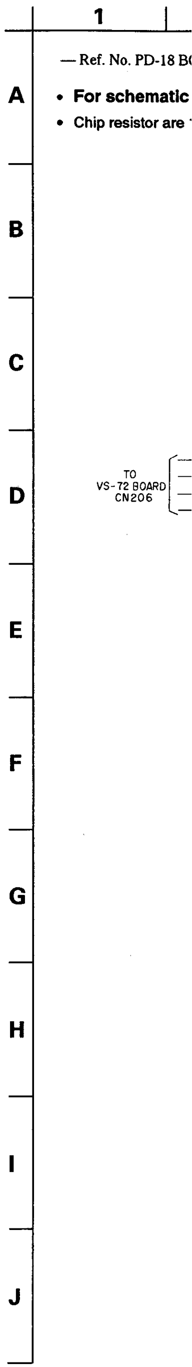
PD-18 BOARD (CONDUCTOR SIDE)


D
E
FL202
1-415-664-11
1-630-597-
11
1
2
3
4
5
6
09

PD-18 (CHROMA

— Ref. No. PD-18 B

- **For schematic**
- Chip resistor are


1
A
B
C
D
E
F
G
H
I
J
TO
VS-72 BOARD
CN206

PD-18 (CHROMA NOISE REDUCTION) SCHEMATIC DIAGRAMS

1 2 3 4 5 6 7 8 9 10 11 12 13

— Ref. No. PD-18 BOARD: 4000 series —

A

- **For schematic diagrams.**
- Chip resistor are 1/10W unless otherwise noted.

B

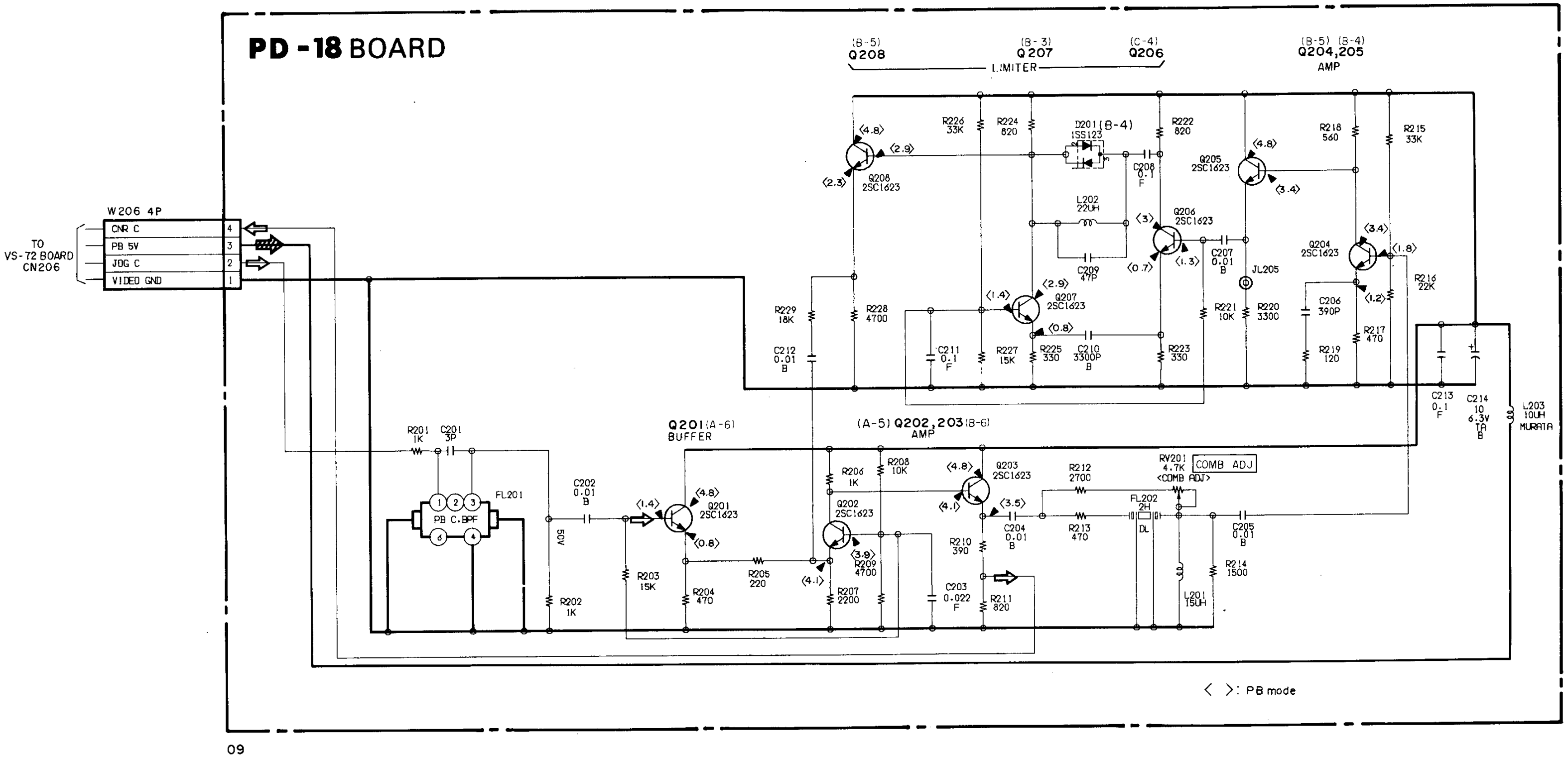
C

D

E

F

G


PD-18 BOARD
TO VS-72 BOARD CN206
W206 4P
CNR C
PB 5V
JOG C
VIDEO GND
4
3
2
1
(B-5) Q208
(B-3) Q207
(C-4) Q206
LIMITER
(B-5) (B-4) Q204,205
AMP
R226 33K
R224 820
D201 (B-4) 1SS123
R222 820
(4.8)
(2.9)
(2.3)
Q208 2SC1623
C208 0.1 F
Q205 2SC1623
(4.8)
(3.4)
R218 560
R215 33K
L202 22UH
(3)
Q206 2SC1623
(0.7)
(1.3)
C207 0.01 B
JL205
C209 47P
Q204 2SC1623
(3.4)
(1.8)
(1.2)
R216 22K
R229 18K
R228 4700
(1.4)
(2.9)
Q207 2SC1623
(0.8)
R221 10K
R220 3300
C206 390P
R217 470
C212 0.01 B
C211 0.1 F
R227 15K
R225 330
C210 3300P B
R223 330
R219 120
C213 0.1 F
C214 10 6.3V TA B
L203 10UH MURATA
R201 1K
C201 3P
Q201 (A-6) BUFFER
(A-5) Q202,203 (B-6) AMP
FL201
PB C.BPF
1
2
3
6
4
C202 0.01 B
50V
(1.4)
(4.8)
Q201 2SC1623
(0.8)
R206 1K
R208 10K
Q202 2SC1623
(4.8)
Q203 2SC1623
(4.1)
(3.5)
R212 2700
RV201 4.7K <COMB ADJ>
COMB ADJ
FL202 2H
DL
C204 0.01 B
R213 470
C205 0.01 B
R210 390
(3.9)
R209 4700
(4.1)
R203 15K
R204 470
R205 220
R207 2200
C203 0.022 F
R211 820
R214 1500
L201 15UH
R202 1K
< >: PB mode
09

H

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC				
PB	⇨			

I

J

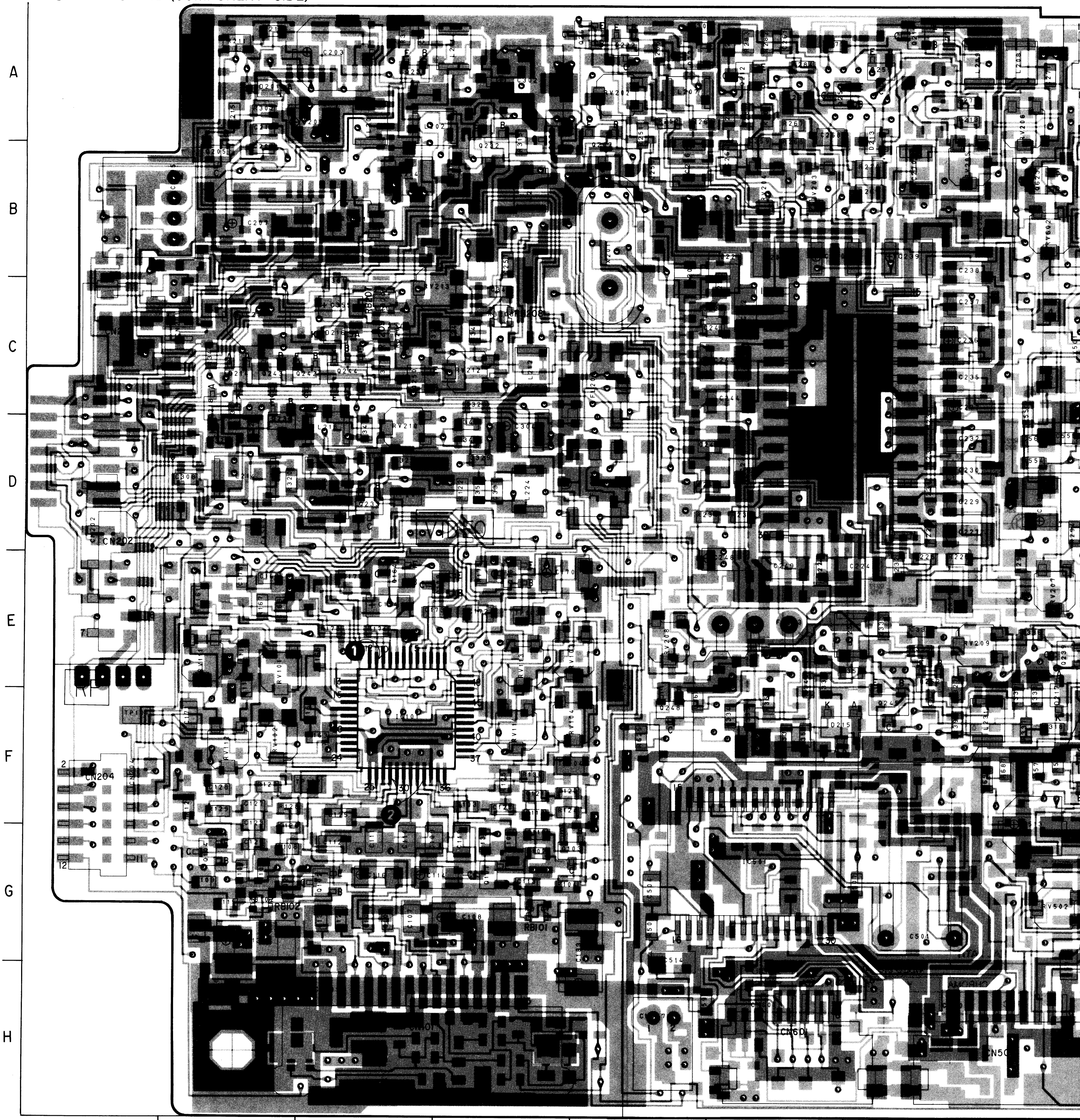
VS-72 (HEAD AMP/VIDEO/SERVO/SYSTEM CONTROL) PRINTED WIRING BOARDS

— Ref. No. VS-72 BOARD: 5000 series —

- **For printed wiring boards.**
- VS-72 board is the printed wiring board which has four layers structure but inner two layers' patterns are omitted.
- Through hole (⊗) is omitted.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

VS-72 BOARD (COMPONENT SIDE)


A
B
C
D
E
F
G
H
1
2
3
4
5
6
7
8
CN202
CN204
C203
C207
RV202
RV209
RV502
C501
C514
CN601
CN501
RB101
RB102
X201
C238
C237
C236
C235
C232
C230
C229
C128
C129
L224
D215
Q248
TP1

DIODE

D201	8-719-404-46	DIODE MA110
D211	8-719-118-21	DIODE 1SS283
D213	8-719-404-35	DIODE MA141WK
D214	8-719-404-35	DIODE MA141WK
D215	8-719-800-76	DIODE 1SS226
D216	8-719-404-46	DIODE MA110
D217	8-719-404-46	DIODE MA110
D218	8-719-404-46	DIODE MA110
D601	8-719-404-40	DIODE MA121
D602	8-719-404-40	DIODE MA121
D603	8-719-404-40	DIODE MA121
D604	8-719-404-40	DIODE MA121
D605	8-719-404-46	DIODE MA110
D606	8-719-404-46	DIODE MA110
D681	8-719-404-46	DIODE MA110

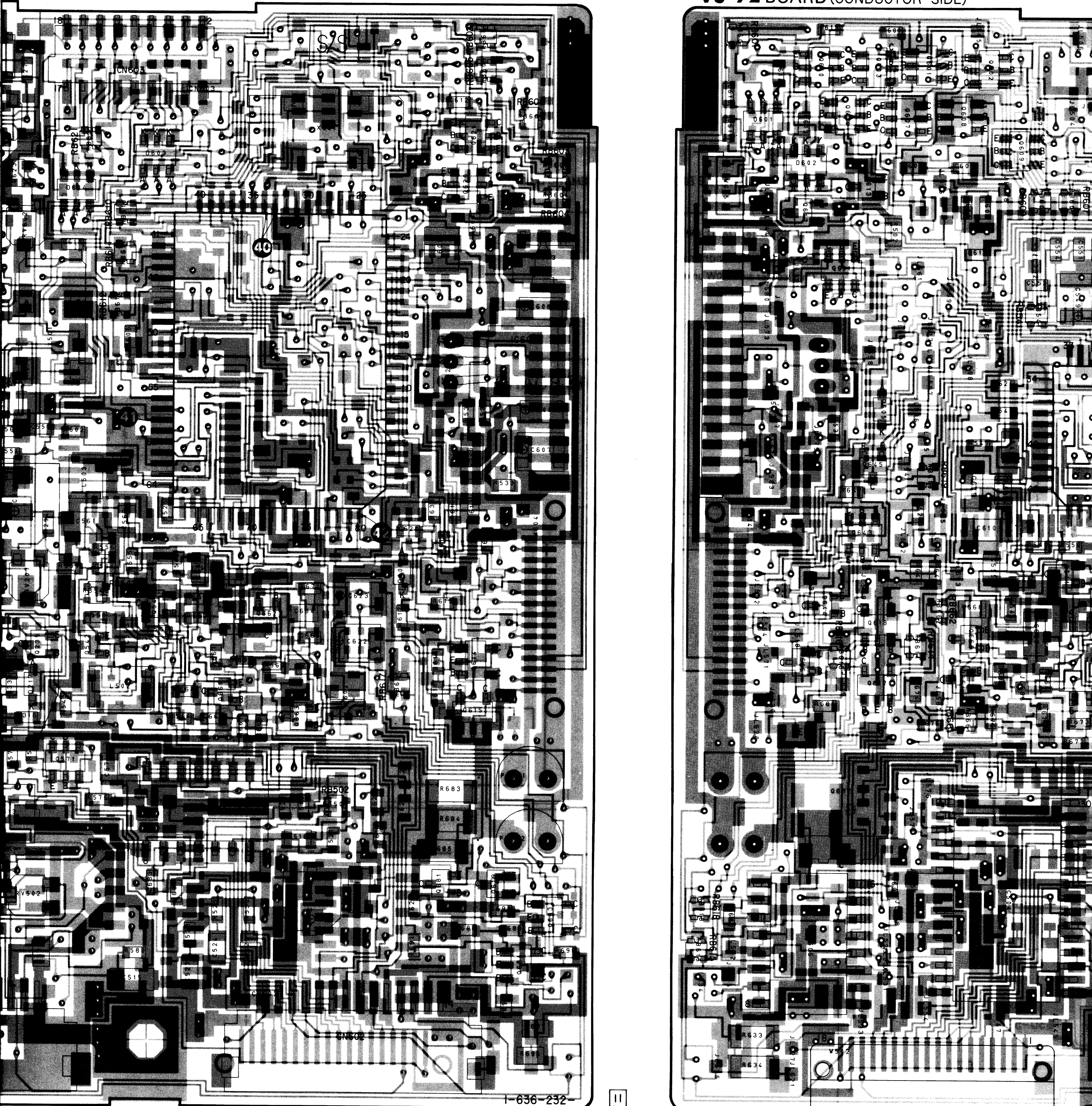
IC

IC101	8-752-033-38	IC CXA1202R
IC102	8-752-033-38	IC CXA1202R
IC201	8-752-033-40	IC CXA1201Q
IC202	8-752-324-87	IC CXL1502M
IC203	8-752-034-40	IC CXA1200BQ
IC204	8-759-605-61	IC CXA1203N
IC205	8-759-009-22	IC MC14094BF
IC501	8-759-990-55	IC CXA8006M
IC502	8-759-148-05	IC CXA8010M
IC504	8-752-038-71	IC CXA1127AM
IC505	8-752-035-48	IC CXA1204Q
IC601	8-752-816-62	IC CXP80116-690Q
IC602	8-759-990-78	IC S-81350AG-REG
IC603	8-759-987-66	IC TL7757
IC604	8-759-100-95	IC UPC324G2
IC605	8-759-030-64	IC MPC1710AM
IC607	8-759-100-93	IC UPC393G2

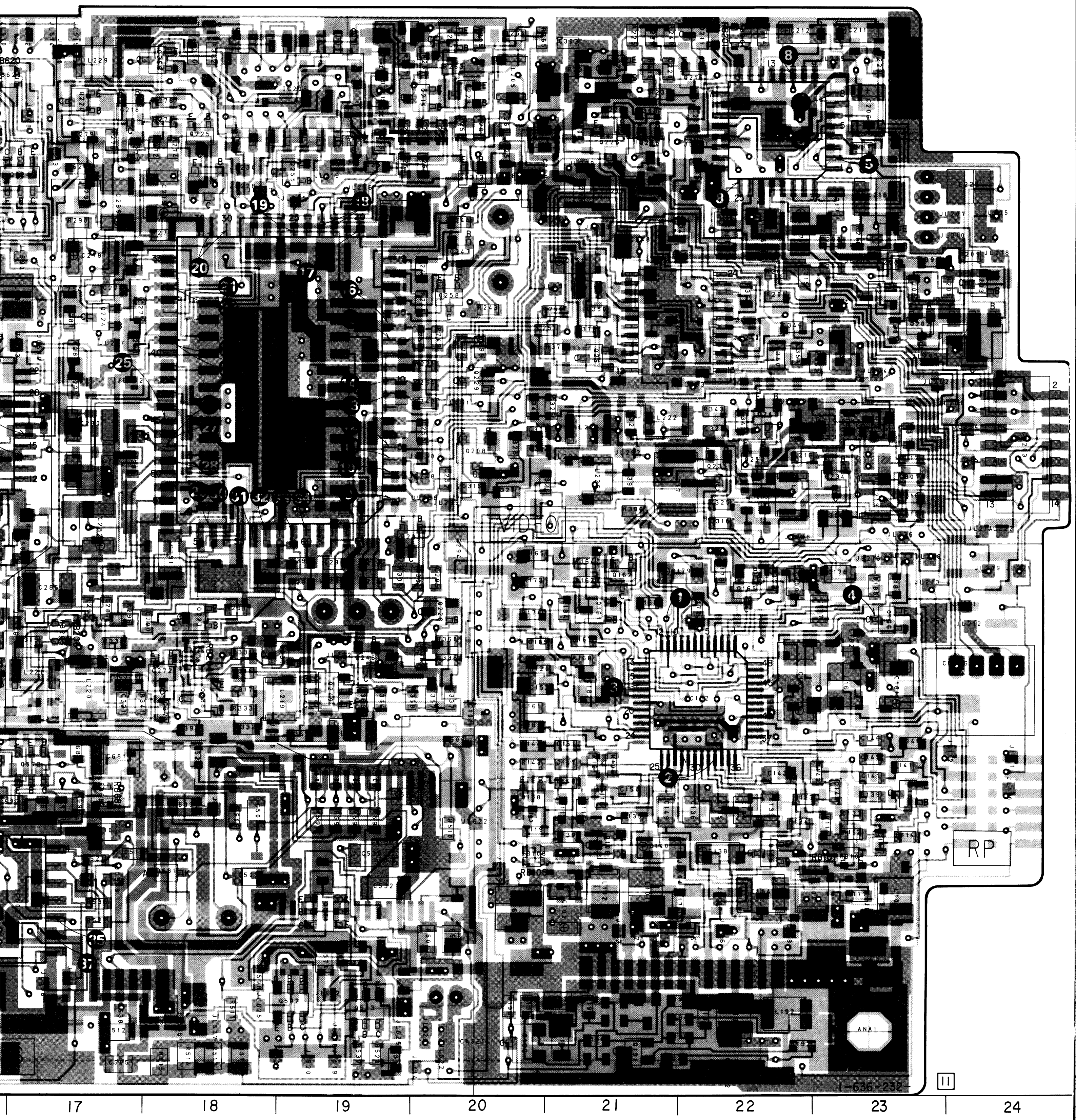
TRANSISTOR

Q101	8-729-209-07	TRANSISTOR 2SC4213-8
Q102	8-729-209-07	TRANSISTOR 2SC4213-8
Q103	8-729-117-16	TRANSISTOR 2SA1611-M6
Q104	8-729-117-16	TRANSISTOR 2SA1611-M6
Q105	8-729-209-07	TRANSISTOR 2SC4213-8
Q106	8-729-209-07	TRANSISTOR 2SC4213-8
Q107	8-729-117-16	TRANSISTOR 2SA1611-M6
Q108	8-729-117-16	TRANSISTOR 2SA1611-M6
Q109	8-729-402-42	TRANSISTOR UN5213
Q161	8-729-403-35	TRANSISTOR UN5113
Q162	8-729-117-32	TRANSISTOR 2SC4177
Q164	8-729-402-42	TRANSISTOR UN5213
Q165	8-729-402-42	TRANSISTOR UN5213
Q166	8-729-402-42	TRANSISTOR UN5213
Q167	8-729-402-42	TRANSISTOR UN5213
Q191	8-729-117-16	TRANSISTOR 2SA1611-M6
Q193	8-729-216-22	TRANSISTOR 2SA1162
Q201	8-729-101-07	TRANSISTOR 2SB798-DL
Q202	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q203	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q204	8-729-402-42	TRANSISTOR UN5213
Q205	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q206	8-729-907-00	TRANSISTOR DTC114EU
Q207	8-729-140-88	TRANSISTOR FP1A3M
Q208	8-729-102-07	TRANSISTOR 2SC2223-F13
Q209	8-729-402-42	TRANSISTOR UN5213
Q211	8-729-905-61	TRANSISTOR DTC124EU
Q212	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q213	8-729-117-32	TRANSISTOR 2SC4177
Q214	8-729-117-32	TRANSISTOR 2SC4177
Q215	8-729-117-16	TRANSISTOR 2SA1161-M6
Q216	8-729-117-32	TRANSISTOR 2SC4177
Q217	8-729-102-07	TRANSISTOR 2SC222-F13
Q218	8-729-117-32	TRANSISTOR 2SC4177
Q219	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q220	8-729-117-32	TRANSISTOR 2SC4177
Q221	8-729-403-35	TRANSISTOR UN5113
Q222	8-729-117-32	TRANSISTOR 2SC4177
Q223	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q224	8-729-403-35	TRANSISTOR UN5113
Q225	8-729-11	
Q226	8-729-80	
Q227	8-729-14	
Q228	8-729-11	
Q229	8-729-90	
Q230	8-729-11	
Q231	8-729-90	
Q232	8-729-14	
Q233	8-729-11	
Q234	8-729-11	
Q235	8-729-14	
Q236	8-729-14	
Q237	8-729-11	
Q238	8-729-10	
Q239	8-729-10	
Q241	8-729-14	
Q242	8-729-40	
Q243	8-729-40	
Q244	8-729-42	
Q245	8-729-10	

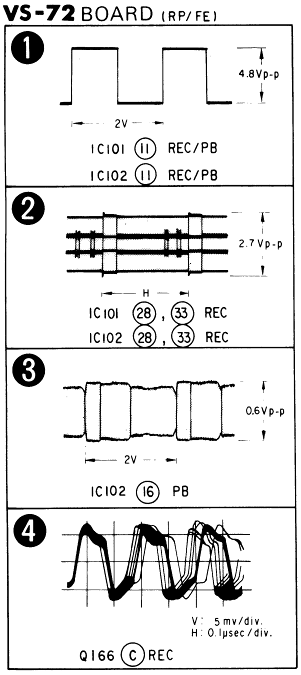
VS-72 BOARD (CONDUCTOR SIDE)



Ref. No.	Part No.	Description
		2SC4177
		2SB1295-UL6
		2SA1611-M5M6
		2SC4177
		DTC144WU
		2SC4177
		DTC144WU
		FP1A3M
		2SC4177
		2SC4177
		2SA1611-M5M6
		2SA1611-M5M6
		2SA1611-M6
		2SC2223-F13
		2SC4177
		2SA1611-M5M6
		UN5213
		UN5113
		XN4213-TW
		2SC2223-F13
Q246	8-729-117-32	TRANSISTOR 2SC4177
Q247	8-729-117-32	TRANSISTOR 2SC4177
Q248	8-729-403-35	TRANSISTOR UN5113
Q249	8-729-420-12	TRANSISTOR XN4213
Q250	8-729-403-35	TRANSISTOR UN5113
Q251	8-729-402-42	TRANSISTOR UN5213
Q252	8-729-117-32	TRANSISTOR 2SC4177
Q253	8-729-117-32	TRANSISTOR 2SC4177
Q254	8-729-403-35	TRANSISTOR UN5113
Q255	8-729-921-08	TRANSISTOR DTC144TU
Q256	8-729-402-42	TRANSISTOR UN5213
Q258	8-729-921-08	TRANSISTOR DTC144TU
Q259	8-729-921-58	TRANSISTOR DTA144TU
Q260	8-729-117-32	TRANSISTOR 2SC4177
Q261	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q270	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q272	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q501	8-729-920-39	TRANSISTOR IMT1US
Q502	8-729-822-94	TRANSISTOR FC102-TR
Q503	8-729-822-94	TRANSISTOR FC102-TR
Q541	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q542	8-729-117-32	TRANSISTOR 2SC4177
Q543	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q571	8-729-920-39	TRANSISTOR IMT1US
Q572	8-729-920-39	TRANSISTOR IMT1US
Q573	8-729-117-32	TRANSISTOR 2SC4177
Q601	8-729-403-24	TRANSISTOR XN4210
Q602	8-729-403-24	TRANSISTOR XN4210
Q603	8-729-403-24	TRANSISTOR XN4210
Q604	8-729-403-24	TRANSISTOR XN4210
Q606	8-729-403-24	TRANSISTOR XN4210
Q607	8-729-403-24	TRANSISTOR XN4210
Q608	8-729-403-24	TRANSISTOR XN4210
Q609	8-729-403-24	TRANSISTOR XN4210
Q610	8-729-403-24	TRANSISTOR XN4210
Q611	8-729-420-12	TRANSISTOR XN4213
Q612	8-729-403-35	TRANSISTOR UN5113
Q613	8-729-402-42	TRANSISTOR UN5213
Q614	8-729-903-97	TRANSISTOR FMS1FE
Q615	8-729-903-82	TRANSISTOR FMW2
Q616	8-729-117-32	TRANSISTOR 2SC4177
Q617	8-729-903-97	TRANSISTOR FMS1FE
Q618	8-729-903-97	TRANSISTOR FMS1FE
Q619	8-729-907-00	TRANSISTOR DTC114EU
Q620	8-729-421-90	TRANSISTOR XN4113
Q621	8-729-420-12	TRANSISTOR XN4213
Q622	8-729-422-14	TRANSISTOR XN4111
Q623	8-729-117-32	TRANSISTOR 2SC4177
Q624	8-729-422-14	TRANSISTOR XN4111
Q643	8-729-403-24	TRANSISTOR XN4210
Q644	8-729-403-35	TRANSISTOR UN5113
Q645	8-729-402-42	TRANSISTOR UN5213
Q661	8-729-117-32	TRANSISTOR 2SC4177
Q662	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q663	8-729-117-32	TRANSISTOR 2SC4177
Q664	8-729-140-63	TRANSISTOR 2SA1611-M5M6
Q665	8-729-117-32	TRANSISTOR 2SC4177
Q681	8-729-117-32	TRANSISTOR 2SC4177
Q682	8-729-820-46	TRANSISTOR 2SB1202FAS
Q683	8-729-902-93	TRANSISTOR FMG4
Q684	8-729-903-97	TRANSISTOR FMS1FE

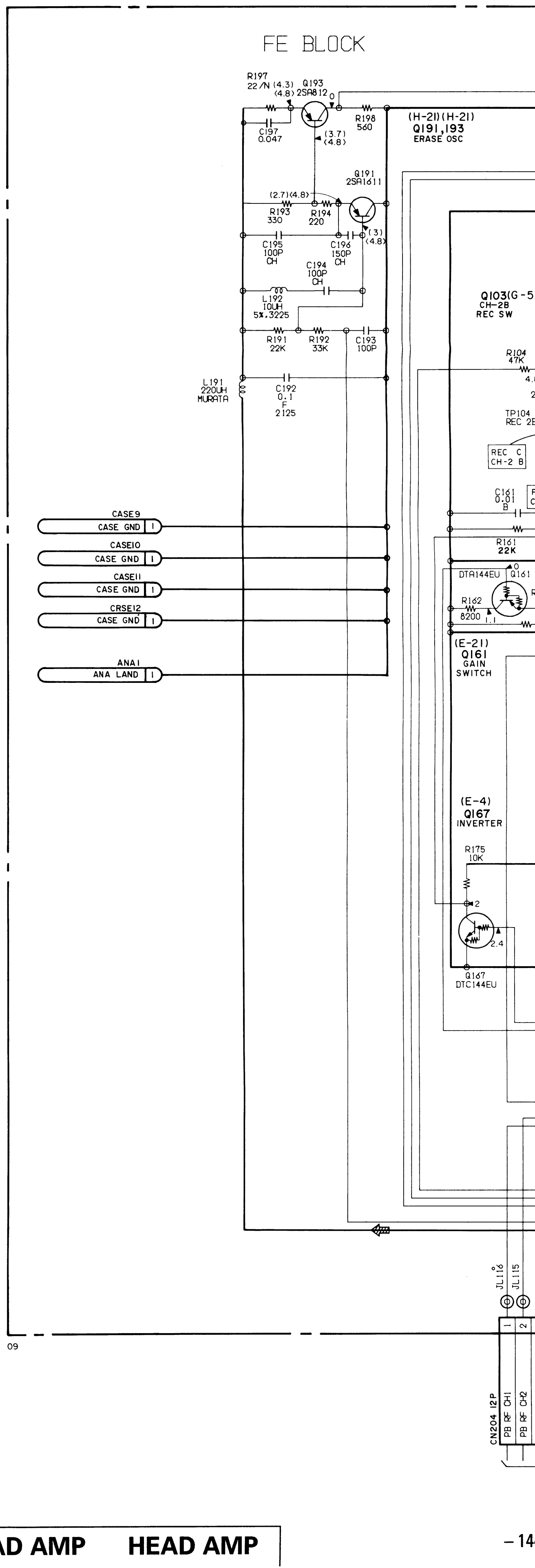


VS-72 BOARD (RP/FE)



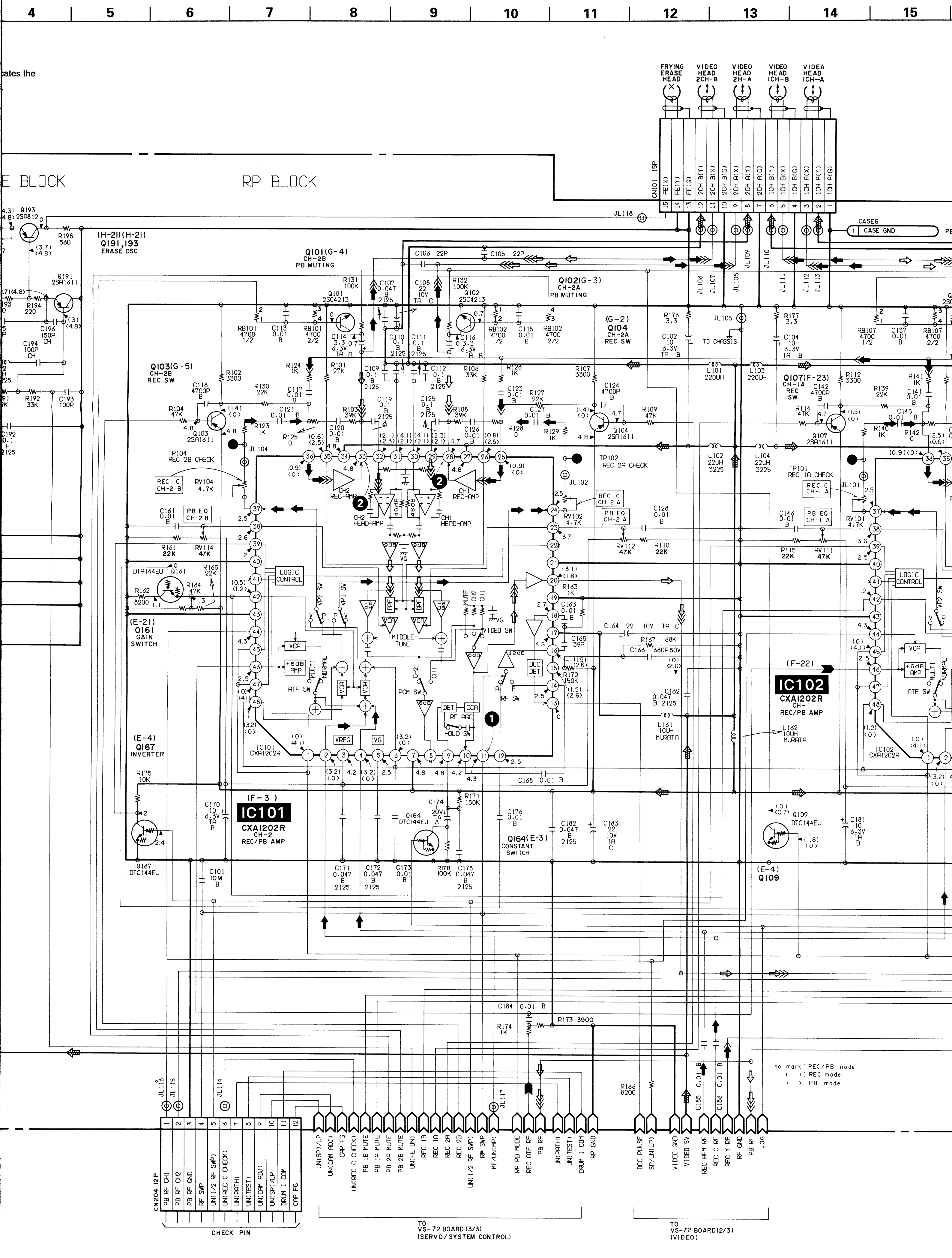
— Ref. No. VS-72 BOARD: 5000 series —

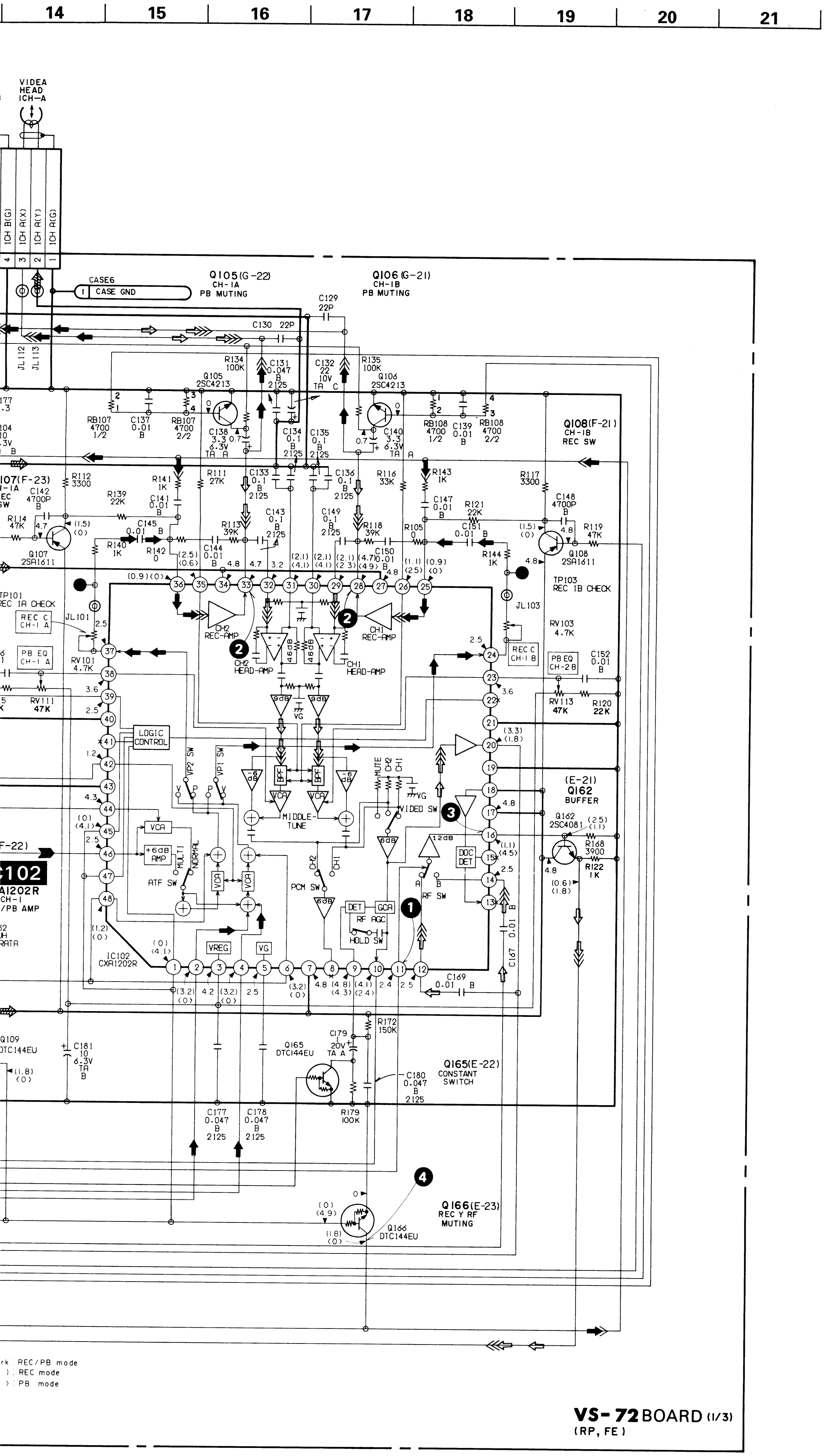
- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.



FE BLOCK
R197 22/N
Q193 2SA812
R198 560
C197 0.047
(H-21)(H-21)
Q191,193
ERASE OSC
Q191 2SA1611
R193 330
R194 220
C195 100P CH
C196 150P CH
C194 100P CH
L192 10UH 5%,3225
R191 22K
R192 33K
C193 100P
L191 220UH MURATA
C192 0.1 F 2125
Q103(G-5)
CH-2B
REC SW
R104 47K
TP104 REC 2B
REC C CH-2 B
C161 0.01 B
R161 22K
DTA144EU
Q161
R162 8200
(E-21)
Q161
GAIN SWITCH
(E-4)
Q167
INVERTER
R175 10K
Q167 DTC144EU
CASE9 CASE GND 1
CASE10 CASE GND 1
CASE11 CASE GND 1
CRSE12 CASE GND 1
ANA1 ANA LAND 1
JL116
JL115
CN204 12P
PB RF CH1
PB RF CH2
09

ates the


4
5
6
7
8
9
10
11
12
13
14
15
FRYING ERASE HEAD
VIDEO HEAD 2CH-B
VIDEO HEAD 2H-A
VIDEO HEAD 1CH-B
VIDEA HEAD 1CH-A
CN101 15P
FE(X)
FE(Y)
FE(G)
2CH B(Y)
2CH B(X)
2CH B(G)
2CH A(X)
2CH A(Y)
2CH A(G)
1CH B(Y)
1CH B(X)
1CH B(G)
1CH A(X)
1CH A(Y)
1CH A(G)
E BLOCK
RP BLOCK
CASE6
CASE GND
Q193 2SA812
R198 560
(H-21)(H-21)
Q191,193
ERASE OSC
Q191 2SA1611
R194 220
C196 150P CH
C194 100P CH
R192 33K
C193 100P
Q101(G-4)
CH-2B
PB MUTING
Q102(G-3)
CH-2A
PB MUTING
C106 22P
C105 22P
R131 100K
C107 0.047 B 2125
C108 22 10V TA C
R132 100K
Q101 2SC4213
Q102 2SC4213
RB101 4700 1/2
C113 0.01 B
RB101 4700 2/2
RB102 4700 1/2
C115 0.01 B
RB102 4700 2/2
C114 3.3 6.3V TA A
C110 0.1 B 2125
C111 0.1 B 2125
C116 3.3 6.3V TA A
(G-2)
Q104
CH-2A
REC SW
Q103(G-5)
CH-2B
REC SW
R102 3300
C118 4700P B
R104 47K
Q103 2SA1611
R130 22K
C117 0.01 B
C121 0.01 B
R123 1K
R125 0
R124 1K
R101 27K
C109 0.1 B 2125
C112 0.1 B 2125
R106 33K
R126 1K
R107 3300
C124 4700P B
C119 0.1 B 2125
C125 0.1 B 2125
C123 0.01 B
R127 22K
C127 0.01 B
R109 47K
Q104 2SA1611
R103 39K
R108 39K
C120 0.01 B
C126 0.01 B
R128 0
R129 1K
TP104
REC 2B CHECK
JL104
TP102
REC 2A CHECK
JL102
REC C CH-2 B
RV104 4.7K
REC C CH-2 A
RV102 4.7K
CH2 REC-AMP
CH1 REC-AMP
CH2 HEAD-AMP
CH1 HEAD-AMP
46dB
9dB
VG
C161 0.01 B
PB EQ CH-2 B
PB EQ CH-2 A
R161 22K
RV114 47K
RV112 47K
R110 22K
C128 0.01 B
DTA144EU Q161
R165 22K
R162 8200
R164 47K
LOGIC CONTROL
(E-21)
Q161
GAIN SWITCH
VP2 SW
VP1 SW
BPF
VCA
-6dB
MUTE
CH2
CH1
MIDDLE-TUNE
VIDEO SW
6dB
12dB
DOC DET
+6dB AMP
MULTI
NORMAL
ATF SW
PCM SW
RF SW
DET
GCA
RF AGC
HOLD SW
VREG
R163 1K
C163 0.01 B
C164 22 10V TA C
R167 68K
C166 680P 50V
C165 39P
R170 150K
C162 0.047 B 2125
L161 10UH MURATA
L162 10UH MURATA
(E-4)
Q167
INVERTER
R175 10K
Q167 DTC144EU
C170 10 6.3V TA B
IC101 CXA1202R
(F-3)
IC101
CXA1202R
CH-2
REC/PB AMP
C101 10M B
C171 0.047 B 2125
C172 0.047 B 2125
C173 0.01 B
C174 20V TA A
R171 150K
Q164 DTC144EU
R178 100K
C175 0.047 B 2125
C176 0.01 B
Q164(E-3)
CONSTANT SWITCH
C182 0.047 B 2125
C183 22 10V TA C
C168 0.01 B
JL118
JL105
JL106
JL107
JL108
JL109
JL110
JL111
JL112
JL113
R176 3.3
R177 3.3
C102 10 6.3V TA B
C104 10 6.3V TA B
TO CHASSIS
L101 220UH
L103 220UH
L102 22UH 3225
L104 22UH 3225
Q107(F-23)
CH-1A
REC SW
C142 4700P B
R112 3300
R139 22K
R141 1K
C141 0.01 B
R114 47K
C145 0.01 B
R140 1K
R142 0
Q107 2SA1611
TP101
REC 1A CHECK
JL101
REC C CH-1 A
PB EQ CH-1 A
C146 0.01 B
RV101 4.7K
R115 22K
RV111 47K
RB107 4700 1/2
C137 0.01 B
RB107 4700 2/2
(F-22)
IC102
CXA1202R
CH-1
REC/PB AMP
IC102 CXA1202R
Q109 DTC144EU
C181 10 6.3V TA B
(E-4)
Q109
C184 0.01 B
R174 1K
R173 3900
R166 8200
C185 0.01 B
C186 0.01 B
no mark : REC/PB mode
( ) : REC mode
⟨ ⟩ : PB mode
JL116
JL115
JL114
JL117
CN204 12P
PB RF CH1
PB RF CH2
PB RF GND
RF SWP
UN(1/2 RF SWP)
UN(REC C CHECK)
UN(PATH)
UN(TEST)
UN(CAM ADJ)
UN(SP)/LP
DRUM 1 COM
CAP FG
CHECK PIN
UN(SP)/LP
UN(CAM ADJ)
CAP FG
UN(REC C CHECK)
PB 1B MUTE
PB 1A MUTE
PB 2A MUTE
PB 2B MUTE
UN(FE ON)
REC 1B
REC 1A
REC 2A
REC 2B
UN(1/2 RF SWP)
RF SWP
ME/UN(MP)
RP PB MODE
REC ATF RF
PB RF
UN(PATH)
UN(TEST)
DRUM 1 COM
RP GND
DOC PULSE
SP/UN(LP)
VIDEO GND
VIDEO 5V
REC AFM RF
REC C RF
REC Y RF
RF GND
PB RF
JOG
TO VS-72 BOARD(3/3) (SERVO/SYSTEM CONTROL)
TO VS-72 BOARD(2/3) (VIDEO)


14
15
16
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21
VIDEA HEAD 1CH-A
1CH B(G)
1CH A(X)
1CH A(Y)
1CH A(G)
CASE6
CASE GND
Q105(G-22) CH-1A PB MUTING
Q106(G-21) CH-1B PB MUTING
C129 22P
C130 22P
JL112
JL113
R134 100K
C131 0.047 B 2125
Q105 2SC4213
C132 22 10V TA C
R135 100K
Q106 2SC4213
RB107 4700 1/2
C137 0.01 B
RB107 4700 2/2
C138 3.3 6.3V TA A
C134 0.1 B 2125
C135 0.1 B 2125
C140 3.3 6.3V TA A
RB108 4700 1/2
C139 0.01 B
RB108 4700 2/2
Q108(F-21) CH-1B REC SW
Q107(F-23)
R112 3300
C142 4700P B
R141 1K
R111 27K
C133 0.1 B 2125
C136 0.1 B 2125
R116 33K
R143 1K
R117 3300
C148 4700P B
R139 22K
C141 0.01 B
C143 0.1 B 2125
C149 0.1 B 2125
C147 0.01 B
R121 22K
R114 47K
C145 0.01 B
R113 39K
R118 39K
R105 0
C151 0.01 B
R119 47K
Q107 2SA1611
R140 1K
R142 0
C144 0.01 B
C150 0.01 B
R144 1K
Q108 2SA1611
TP101 REC 1A CHECK
TP103 REC 1B CHECK
REC C CH-1 A
JL101
JL103
RV103 4.7K
PB EQ CH-1 A
RV101 4.7K
REC C CH-1 B
PB EQ CH-2 B
C152 0.01 B
RV111 47K
RV113 47K
R120 22K
CH2 REC-AMP
CH1 REC-AMP
CH2 HEAD-AMP
CH1 HEAD-AMP
46dB
9dB
VG
LOGIC CONTROL
VP2 SW
VP1 SW
BPF
VCA
MIDDLE-TUNE
MUTE CH2 CH1
VIDEO SW
(E-21) Q162 BUFFER
Q162 2SC4081
R168 3900
R122 1K
+6dB AMP
MULTI
NORMAL
ATF SW
PCM SW
DOC DET
12dB
RF SW
DET
GCA
RF AGC
HOLD SW
VREG
IC102 CXA1202R
102
A1202R CH-1 /PB AMP
C167 0.01 B
C169 0.01 B
R172 150K
C179 20V TA A
Q165 DTC144EU
Q165(E-22) CONSTANT SWITCH
C180 0.047 B 2125
R179 100K
C177 0.047 B 2125
C178 0.047 B 2125
Q109 DTC144EU
C181 10 6.3V TA B
Q166(E-23) REC Y RF MUTING
Q166 DTC144EU
rk : REC/PB mode
) : REC mode
) : PB mode
VS-72 BOARD (1/3)
(RP, FE)

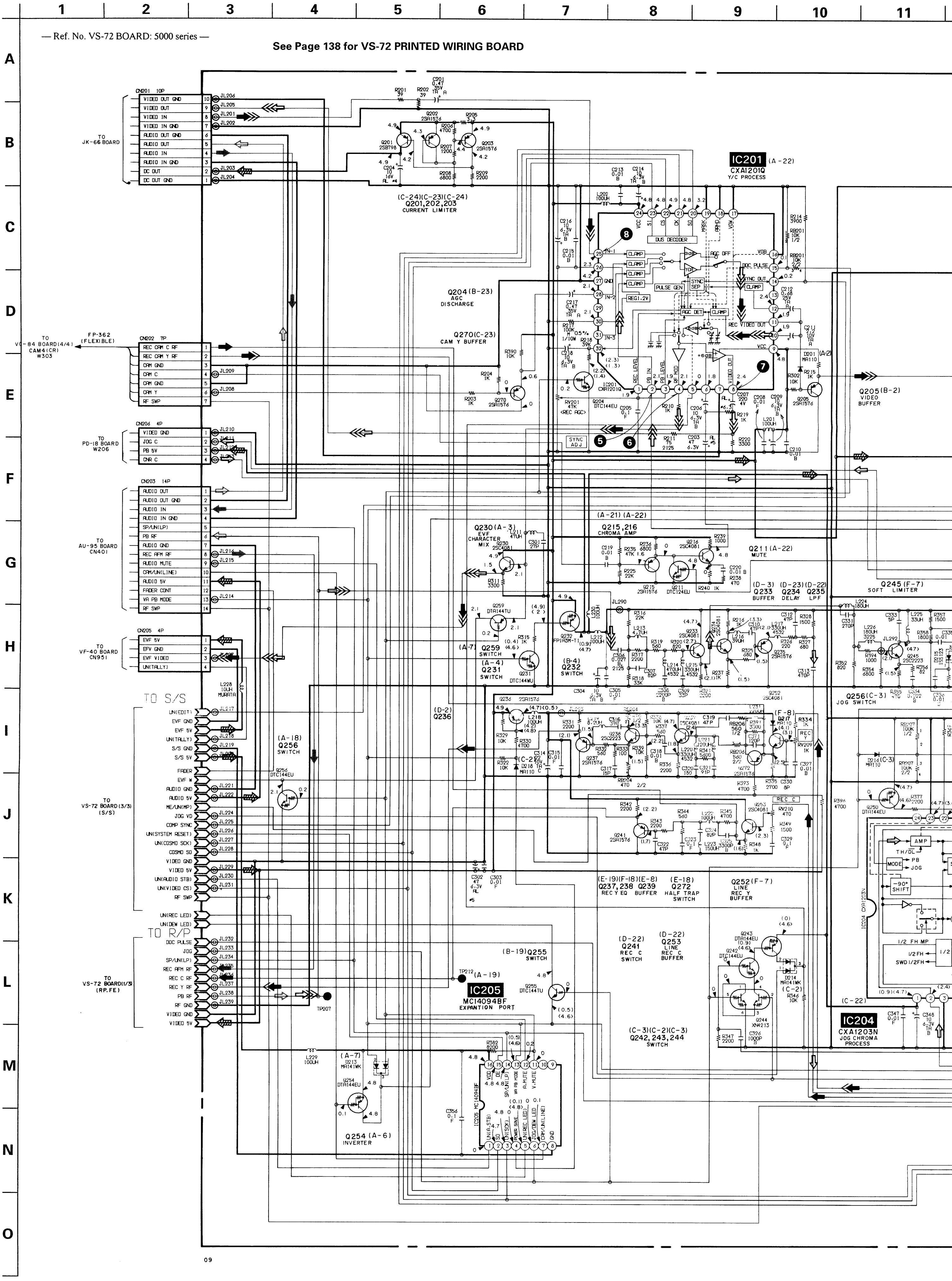
• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	➡≫	➡⋙	➡
PB			⇨⋙	⇨

HEAD AMP HEAD AMP

— Ref. No. VS-72 BOARD: 5000 series —

See Page 138 for VS-72 PRINTED WIRING BOARD


1
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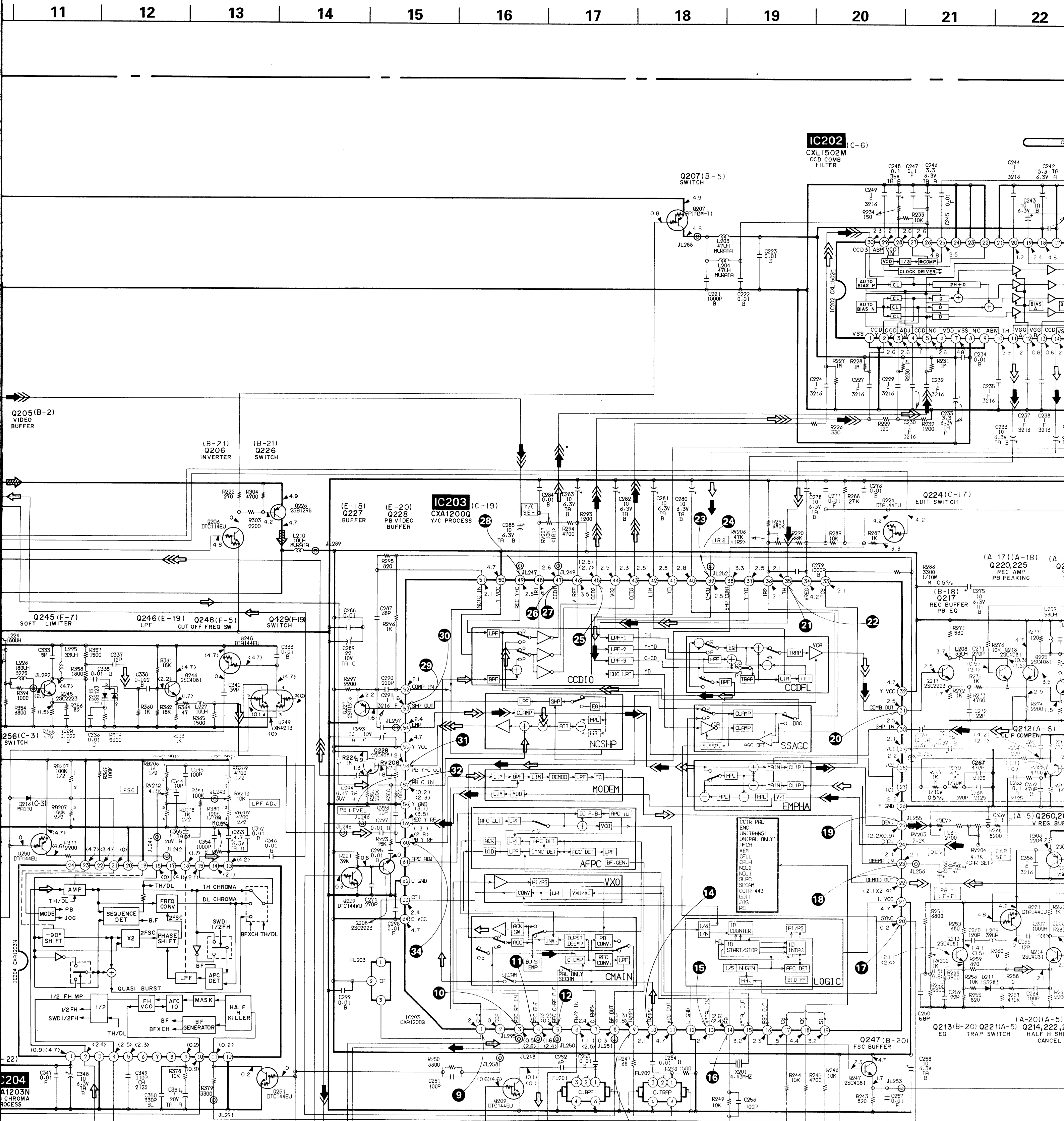
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
CN201 10P
VIDEO OUT GND
VIDEO OUT
VIDEO IN
VIDEO IN GND
AUDIO OUT GND
AUDIO OUT
AUDIO IN
AUDIO IN GND
DC OUT
DC OUT GND
TO JK-66 BOARD
JL206
JL205
JL201
JL202
JL203
JL204
(C-24)(C-23)(C-24)
Q201,202,203
CURRENT LIMITER
IC201 (A-22)
CXA1201Q
Y/C PROCESS
DUS DECODER
CLAMP
AGC OFF
DOC PULSE
SYNC OUT
SYNC SEP
PULSE GEN
REG1.2V
AGC DET
REC VIDEO OUT
Q204 (B-23)
AGC DISCHARGE
Q270 (C-23)
CAM Y BUFFER
Q205 (B-2)
VIDEO BUFFER
TO VC-84 BOARD (4/4) CAM4 (CR) W303
FP-362 (FLEXIBLE)
CN202 7P
REC CAM C RF
REC CAM Y RF
CAM GND
CAM C
CAM GND
CAM Y
RF SWP
JL209
JL208
CN206 4P
VIDEO GND
JOG C
PB 5V
CNR C
TO PD-18 BOARD W206
JL210
SYNC ADJ
CN203 14P
AUDIO OUT
AUDIO OUT GND
AUDIO IN
AUDIO IN GND
SP/UN(LP)
PB RF
AUDIO GND
REC AFM RF
AUDIO MUTE
CAM/UN(LINE)
AUDIO 5V
FADER CONT
VA PB MODE
RF SWP
TO AU-95 BOARD CN401
JL214
JL215
JL216
(A-21) (A-22)
Q215,216
CHROMA AMP
Q230 (A-3)
EVF CHARACTER MIX
Q211 (A-22)
MUTE
(D-3) Q233 BUFFER
(D-23) Q234 DELAY
(D-22) Q235 LPF
Q245 (F-7)
SOFT LIMITER
CN205 4P
EVF 5V
EFV GND
EVF VIDEO
UN(TALLY)
TO VF-40 BOARD CN951
L228 10UH MURATA
Q259 SWITCH
(A-4) Q231 SWITCH
(B-4) Q232 SWITCH
Q256 (C-3)
JOG SWITCH
TO S/S
UN(EDIT)
EVF GND
EVF 5V
UN(TALLY)
S/S GND
S/S 5V
FADER
EVF W
AUDIO GND
AUDIO 5V
ME/UN(MP)
JOG VD
COMP SYNC
UN(SYSTEM RESET)
UN(COSMO SCK)
COSMO SO
VIDEO GND
VIDEO 5V
UN(AUDIO STB)
UN(VIDEO CS)
RF SWP
UN(REC LED)
UN(DEW LED)
TO VS-72 BOARD (3/3) (S/S)
(D-2) Q236
(A-18) Q256 SWITCH
(E-19)(F-18)(E-8) Q237,238 REC Y EQ
Q239 BUFFER
(E-18) Q272 HALF TRAP SWITCH
Q252 (F-7) LINE REC Y BUFFER
TO R/P
DOC PULSE
JOG
SP/UN(LP)
REC AFM RF
REC C RF
REC Y RF
PB RF
RF GND
VIDEO GND
VIDEO 5V
TO VS-72 BOARD (1/3) (RP.FE)
(D-22) Q241 REC C SWITCH
(D-22) Q253 LINE REC C BUFFER
(B-19) Q255 SWITCH
TP212 (A-19)
IC205
MC14094BF
EXPANTION PORT
TP207
(C-3)(C-2)(C-3)
Q242,243,244
SWITCH
IC204
CXA1203N
JOG CHROMA PROCESS
(C-22)
AMP
TH/DL
MODE
PB
JOG
-90° SHIFT
1/2 FH MP
1/2FH
SWD 1/2FH
(A-7)
D213 MA141WK
Q254 DTA144EU
Q254 (A-6)
INVERTER
L229 100UH
09


11
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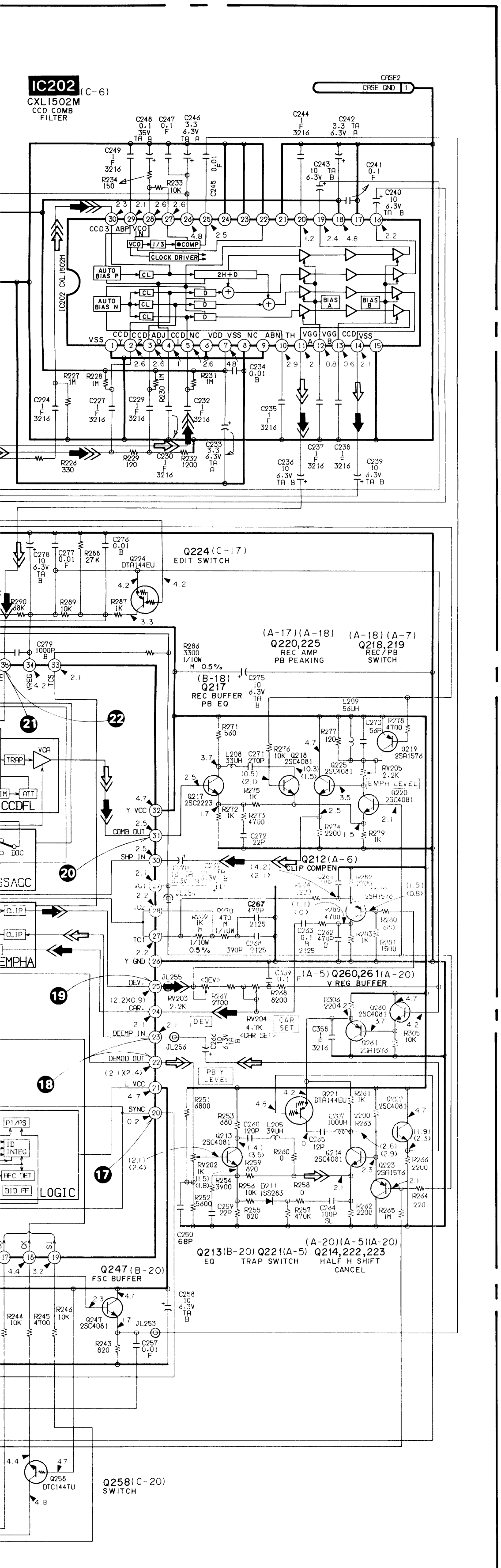
16
17
18
19
20
21
22
IC202 (C-6)
CXL1502M
CCD COMB FILTER
Q207 (B-5)
SWITCH
Q207 DTA144E
L203 47UH MURATA
L204 47UH MURATA
JL288
CLOCK DRIVER
AUTO BIAS P
AUTO BIAS N
IC202 CXL1502M
Q205 (B-2)
VIDEO BUFFER
(B-21) Q206 INVERTER
(B-21) Q226 SWITCH
IC203 (C-19)
CXA1200Q
Y/C PROCESS
(E-18) Q227 BUFFER
(E-20) Q228 PB VIDEO BUFFER
Q224 (C-17)
EDIT SWITCH
Q245 (F-7) SOFT LIMITER
Q246 (E-19) LPF
Q248 (F-5) CUT OFF FREQ SW
Q429 (F-19) SWITCH
Q256 (C-3) SWITCH
CCDIO
CCDFL
NCSHP
SSAGC
MODEM
EMPHA
AFPC
VXO
CMAIN
LOGIC
LPF-1
LPF-2
LPF-3
DOC LPF
CLAMP
BURST DEEMP
PB CONV.
REC CONV.
C-EMP
ID COUNTER
ID START/STOP
ID INTEG
1/5 NHGEN
AFC DET
DID FF
CCIR PAL
ENC
UN(TRANS)
UN(PAL ONLY)
AFCH
VEM
CFLL
CFLH
NCL2
NCL1
SLFC
SECAM
CCIR 443
EDIT
JOG
PB
MODE
AMP
SEQUENCE DET
FREQ CONV
PHASE SHIFT
-90° SHIFT
X2
APC DET
QUASI BURST
1/2 FH MP
FH VCO
AFC 10
MASK
HALF H KILLER
BF GENERATOR
TH CHROMA
DL CHROMA
IC204 CXA1203N
IC204
CXA1203N
CHROMA PROCESS
FL201 C.BPF
FL202 C-TRAP
FL203 CF
X201 4.43MHz
<CROMA EMPHA>
<PB C.TRAP>
Q209 (D-20) TRAP FREQ SW
Q251 (C-21) SWITCH
Q229 (C-20) INVERTER
Q208 (D-20) CHROMA ATT
Q258 (C-20) SWITCH
Q247 (B-20) FSC BUFFER
Q224 DTA144EU
Q220,225 (A-17)(A-18) REC AMP PB PEAKING
Q217 (B-18) REC BUFFER PB EQ
Q212 (A-6) CLIP COMPEN
Q260,26 (A-5) V REG BUF
Q213 (B-20) EQ
Q221 (A-5) TRAP SWITCH
Q214,222 (A-20)(A-5) HALF H SH CANCEL
PB LEVEL
LPF ADJ
FSC
no mark : REC/P
: REC
( ) : PB

VS-72 BOARD

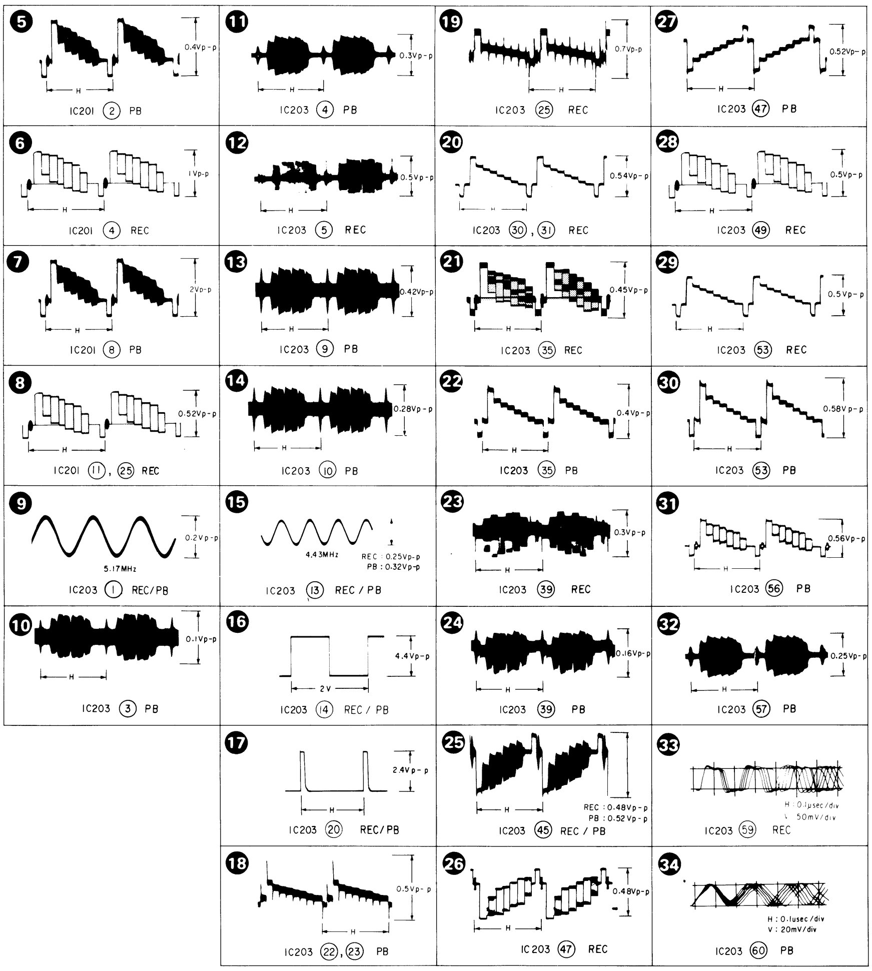

CASE2
CASE GND
IC202 (C-6)
CXL1502M
CCD COMB FILTER
AUTO BIAS P
AUTO BIAS N
CLOCK DRIVER
VCO
1/3
COMP
2H+D
BIAS A
BIAS B
Q224 (C-17)
EDIT SWITCH
DTA144EU
(A-17)(A-18)
Q220,225
REC AMP
PB PEAKING
(A-18)(A-7)
Q218,219
REC/PB SWITCH
(B-18)
Q217
REC BUFFER
PB EQ
Q212 (A-6)
CLIP COMPEN
(A-5) Q260,261 (A-20)
V REG BUFFER
EMPH LEVEL
CAR SET
PB Y LEVEL
VCA
TRAP
ATT
CCDFL
SAGC
CLIP
EMPHA
LOGIC
Y VCC
COMB OUT
SHP IN
Y GND
DEV
CAR
DEEMP IN
DEMOD OUT
L VCC
SYNC
Q213 (B-20) EQ
Q221 (A-5) TRAP SWITCH
(A-20)(A-5)(A-20)
Q214,222,223
HALF H SHIFT CANCEL
Q247 (B-20)
FSC BUFFER
Q258 (C-20)
SWITCH
DTC144TU

no mark : REC/PB mode
(　　) : REC mode
〈　　〉 : PB mode

VS-72 BOARD (2/3) (VIDEO)

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.

VS-72 BOARD (VIDEO)



· SIGNAL PATH

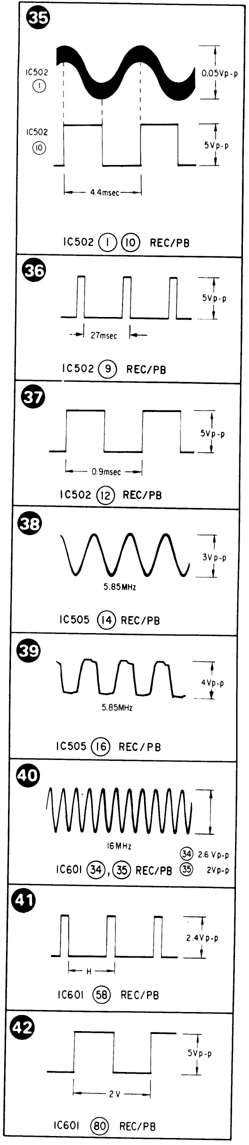
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC	➡	➡	➡	➡
PB	⇨	⇨	⇨	⇨

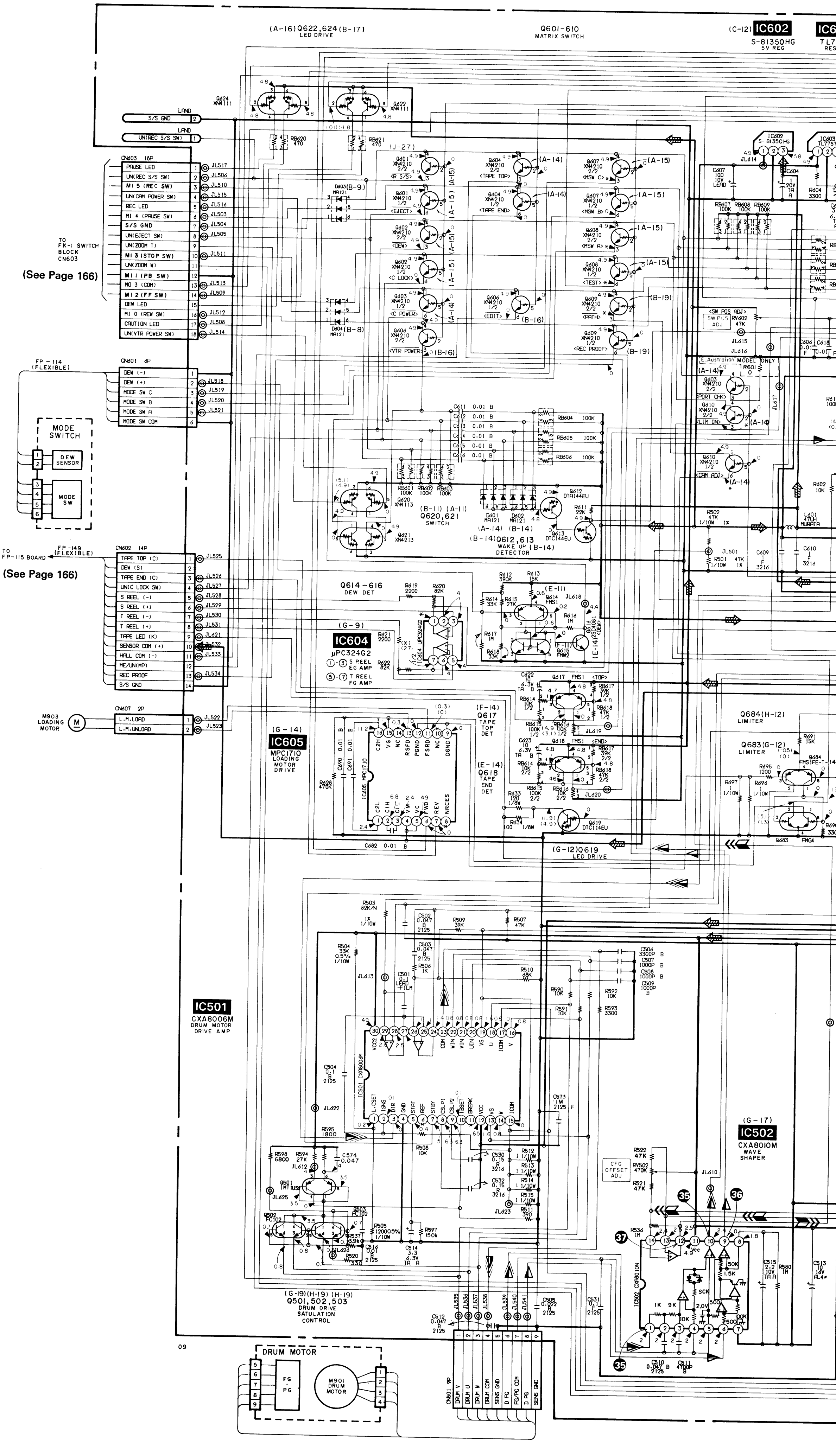
VS-72 (SERVO/SYSTEM CONTROL) SCHEMATIC DIAGRAMS

— Ref. No. VS-72 BOARD: 5000 series —

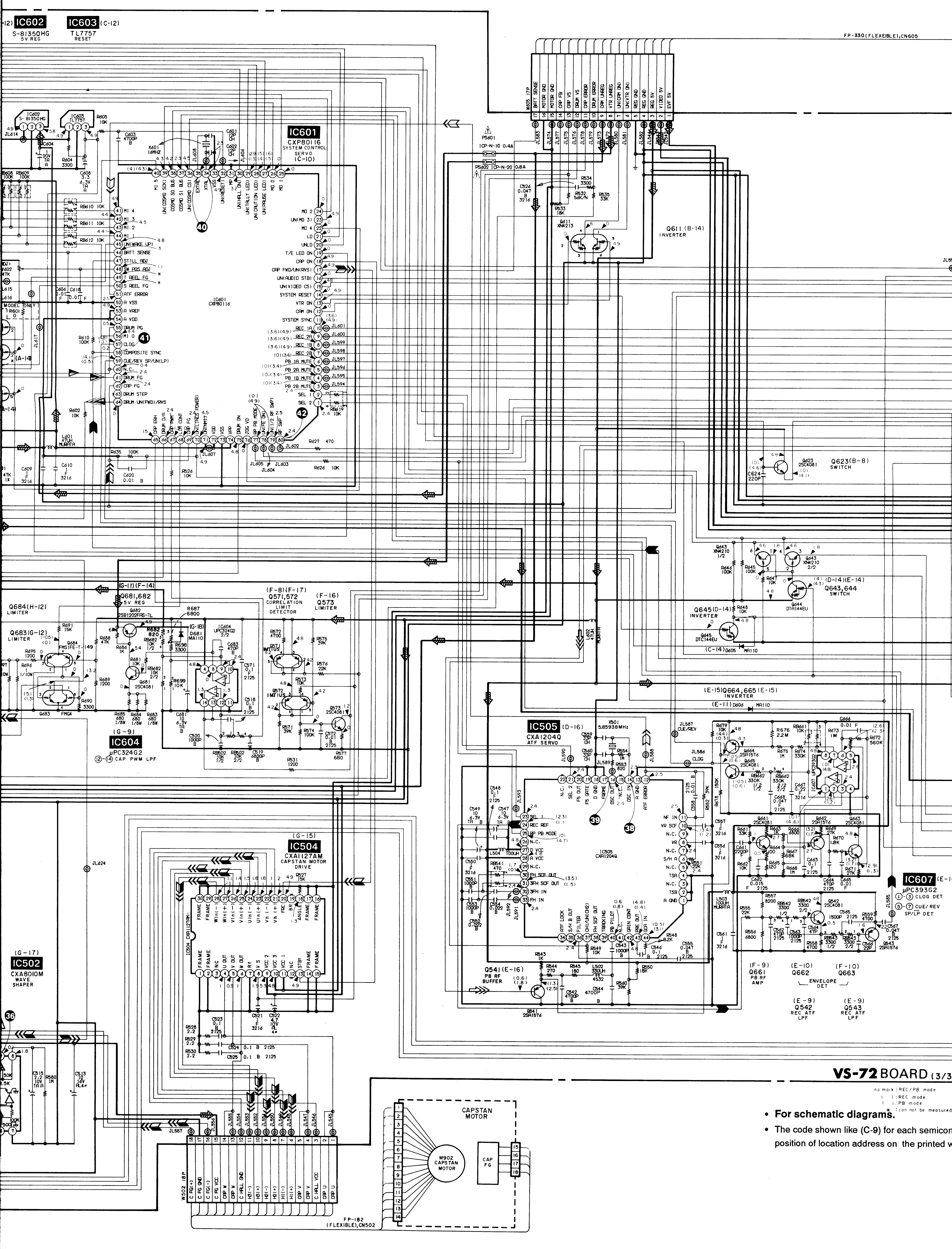
See Page 138 for VS-72 PRINTED WIRING BOARD

VS-72 BOARD (SYSCON/SERVO)





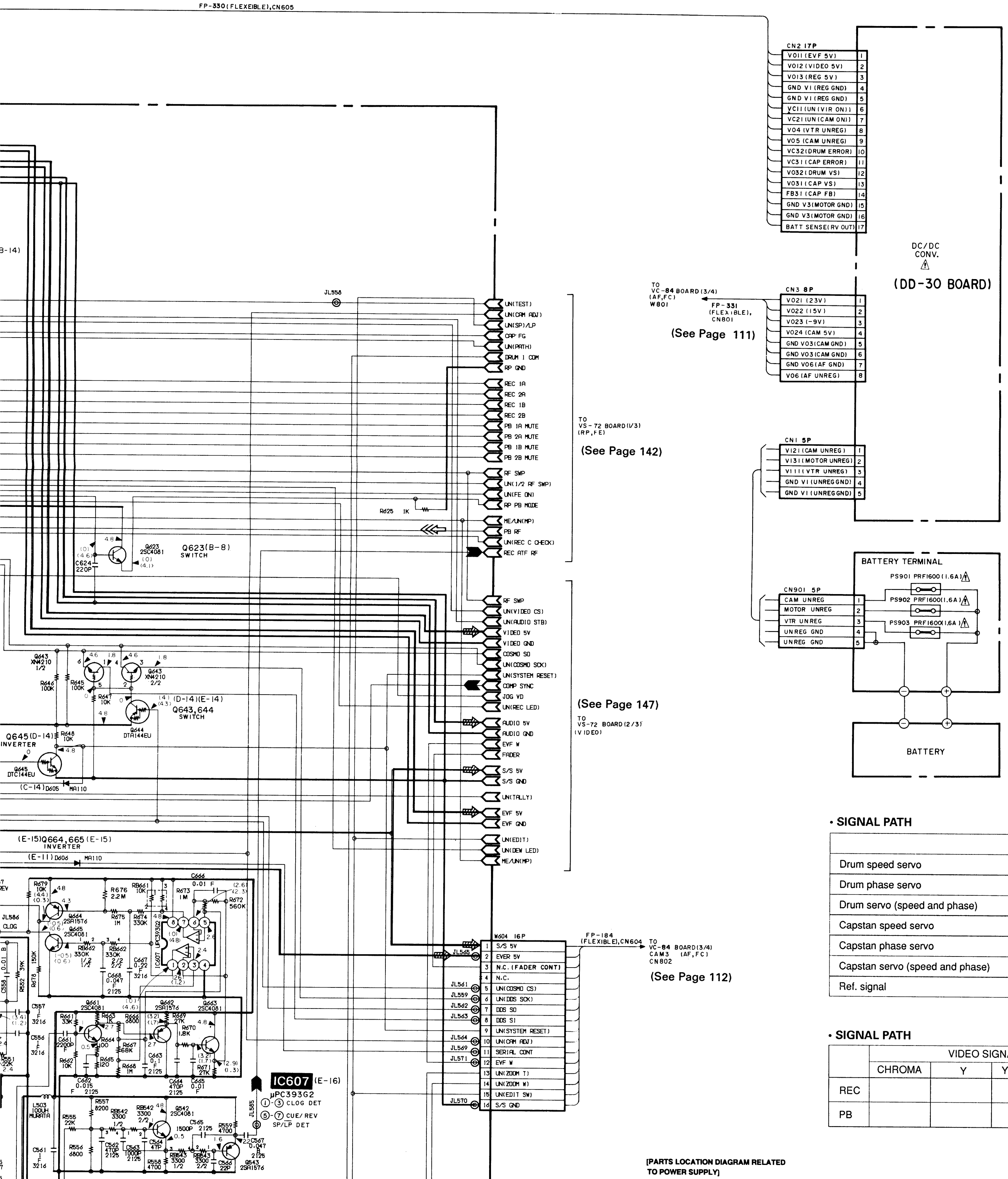
(A-16)Q622,624(B-17) LED DRIVE
Q601-610 MATRIX SWITCH
(C-12) IC602 S-81350HG 5V REG
IC6
TL7
S/S GND
UN(REC S/S SW)
CN603 18P
PAUSE LED
UN(REC S/S SW)
MI 5 (REC SW)
UN(CAM POWER SW)
REC LED
MI 4 (PAUSE SW)
S/S GND
UN(EJECT SW)
UN(ZOOM T)
MI 3 (STOP SW)
UN(ZOOM W)
MI 1 (PB SW)
MO 3 (COM)
MI 2 (FF SW)
DEW LED
MI 0 (REW SW)
CAUTION LED
UN(VTR POWER SW)
TO FK-1 SWITCH BLOCK CN603
(See Page 166)
FP-114 (FLEXIBLE)
CN601 6P
DEW (-)
DEW (+)
MODE SW C
MODE SW B
MODE SW A
MODE SW COM
MODE SWITCH
DEW SENSOR
MODE SW
TO FP-115 BOARD
FP-149 (FLEXIBLE)
(See Page 166)
CN602 14P
TAPE TOP (C)
DEW (S)
TAPE END (C)
UN(C LOCK SW)
S REEL (-)
S REEL (+)
T REEL (-)
T REEL (+)
TAPE LED (K)
SENSOR COM (+)
HALL COM (-)
ME/UN(MP)
REC PROOF
S/S GND
M903 LOADING MOTOR
CN607 2P
L.M.LOAD
L.M.UNLOAD
(B-11) (A-11) Q620,621 SWITCH
(B-14)Q612,613 WAKE UP (B-14) DETECTOR
Q614-616 DEW DET
(G-9) IC604 μPC324G2
①-③ S REEL EG AMP
⑤-⑦ T REEL FG AMP
(G-14) IC605 MPC1710 LOADING MOTOR DRIVE
(F-14) Q617 TAPE TOP DET
(E-14) Q618 TAPE END DET
(G-12)Q619 LED DRIVE
Q684(H-12) LIMITER
Q683(G-12) LIMITER
IC501 CXA8006M DRUM MOTOR DRIVE AMP
(G-19)(H-19) (H-19) Q501,502,503 DRUM DRIVE SATULATION CONTROL
(G-17) IC502 CXA8010M WAVE SHAPER
CFG OFFSET ADJ
DRUM MOTOR
FG PG
M901 DRUM MOTOR
CN501 9P
DRUM V
DRUM U
DRUM W
DRUM COM
SENS GND
D FG
FG/PG COM
D PG
SENS GND


IC602 S-81350HG 5V REG
IC603 (C-12) TL7757 RESET
FP-330(FLEXEIBLE),CN605
IC601 CXP80116 SYSTEM CONTROL SERVO (C-10)
X601 16MHz
PS601 ICP-N-10 0.4A
PS602 ICP-N-20 0.8A
Q611 (B-14) INVERTER
Q623(B-8) SWITCH
Q643,644 (D-14)(E-14) SWITCH
Q645(D-14) INVERTER
(C-14) D605 MA110
(E-15)Q664,665(E-15) INVERTER
(E-11) D606 MA110
Q684(H-12) LIMITER
Q683(G-12) LIMITER
(G-11)(F-14) Q681,682 5V REG
(G-18) D681 MA110
(F-8)(F-17) Q571,572 CORRELATION LIMIT DETECTOR
(F-16) Q573 LIMITER
(G-9) IC604 μPC324G2 ⑫-⑭ CAP PWM LPF
IC505 (D-16) CXA1204Q ATF SERVO
X501 5.85938MHz
IC607 (E-1 μPC393G2 ①-③ CLOG DET ⑤-⑦ CUE/REV SP/LP DET
(G-15) IC504 CXA1127AM CAPSTAN MOTOR DRIVE
(G-17) IC502 CXA8010M WAVE SHAPER
Q541 (E-16) PB RF BUFFER
(F-9) Q661 PB RF AMP
(E-10) Q662 ENVELOPE DET
(F-10) Q663
(E-9) Q542 REC ATF LPF
(E-9) Q543 REC ATF LPF
CAPSTAN MOTOR
M902 CAPSTAN MOTOR
CAP FG
FP-182 (FLEXIBLE),CN502
W502 18P
W605 17P
40
41
42
39
38
36

VS-72 BOARD (3/3

no mark : REC/PB mode
( ) : REC mode
< > : PB mode
* : can not be measured

- **For schematic diagrams.**
- The code shown like (C-9) for each semicon
position of location address on the printed w

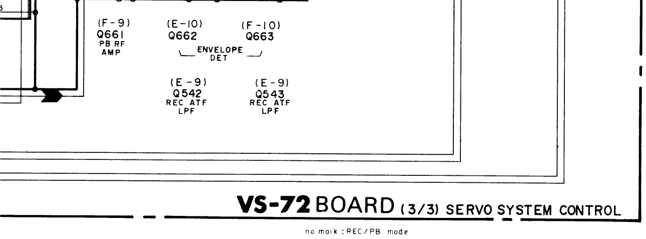

FP-330(FLEXIBLE),CN605
CN2 17P
VO11(EVF 5V) 1
VO12(VIDEO 5V) 2
VO13(REG 5V) 3
GND V1(REG GND) 4
GND V1(REG GND) 5
VC11(UN(VIR ON)) 6
VC21(UN(CAM ON)) 7
VO4(VTR UNREG) 8
VO5(CAM UNREG) 9
VC32(DRUM ERROR) 10
VC31(CAP ERROR) 11
VO32(DRUM VS) 12
VO31(CAP VS) 13
FB31(CAP FB) 14
GND V3(MOTOR GND) 15
GND V3(MOTOR GND) 16
BATT SENSE(RV OUT) 17
DC/DC CONV.
(DD-30 BOARD)
TO VC-84 BOARD(3/4) (AF,FC) W801
FP-331 (FLEXIBLE), CN801
(See Page 111)
CN3 8P
VO21(23V) 1
VO22(15V) 2
VO23(-9V) 3
VO24(CAM 5V) 4
GND VO3(CAM GND) 5
GND VO3(CAM GND) 6
GND VO6(AF GND) 7
VO6(AF UNREG) 8
CN1 5P
V121(CAM UNREG) 1
V131(MOTOR UNREG) 2
V111(VTR UNREG) 3
GND V1(UNREG GND) 4
GND V1(UNREG GND) 5
BATTERY TERMINAL
PS901 PRF1600(1.6A)
PS902 PRF1600(1.6A)
PS903 PRF1600(1.6A)
CN901 5P
CAM UNREG 1
MOTOR UNREG 2
VTR UNREG 3
UNREG GND 4
UNREG GND 5
BATTERY
JL558
UN(TEST)
UN(CAM ADJ)
UN(SP)/LP
CAP FG
UN(PATH)
DRUM 1 COM
RP GND
REC 1A
REC 2A
REC 1B
REC 2B
PB 1A MUTE
PB 2A MUTE
PB 1B MUTE
PB 2B MUTE
RF SWP
UN(1/2 RF SWP)
UN(FE ON)
RP PB MODE
ME/UN(MP)
PB RF
UN(REC C CHECK)
REC ATF RF
TO VS-72 BOARD(1/3) (RP,FE)
(See Page 142)
R625 1K
Q623 2SC4081
Q623(B-8) SWITCH
C624 220P
RF SWP
UN(VIDEO CS)
UN(AUDIO STB)
VIDEO 5V
VIDEO GND
COSMO SO
UN(COSMO SCK)
UN(SYSTEM RESET)
COMP SYNC
JOG VD
UN(REC LED)
AUDIO 5V
AUDIO GND
EVF W
FADER
S/S 5V
S/S GND
UN(TALLY)
EVF 5V
EVF GND
UN(EDIT)
UN(DEW LED)
ME/UN(MP)
(See Page 147)
TO VS-72 BOARD(2/3) (VIDEO)
Q643 XN4210
R646 100K
R645 100K
R647 10K
Q644 DTA144EU
(D-14)(E-14) Q643,644 SWITCH
Q645(D-14) INVERTER
R648 10K
Q645 DTC144EU
(C-14) D605 MA110
(E-15)Q664,665(E-15) INVERTER
(E-11) D606 MA110
R679 10K
R676 2.2M
RB661
R673 1M
C666 0.01 F
R672 560K
JL586 CLOG
Q664 2SA1576
Q665 2SC4081
R675 1M
R674 330K
RB662 330K
C667 0.22
C668 0.047 F 2125
Q661 2SC4081
Q662 2SA1576
Q663 2SC4081
R661 33K
R663 1K
R666 6800
R669 27K
R670 1.8K
R664 100
R667 68K
R665 120
R668 1M
C661 2200P
C663 0.1 F 2125
C664 470P
C665 0.01 F
R671 27K
R662 10K
C662 0.015 F 2125
C557 F 3216
C556 F 3216
IC607 (E-16)
μPC393G2
①-③ CLOG DET
⑤-⑦ CUE/REV SP/LP DET
JL585
L503 100μH MURATA
R555 22K
R557 8200
RB542 3300
Q542 2SC4081
C565 1500P 2125
R559 4700
C567 0.047 F 2125
R556 6800
C562 470P 2125
C563 1000P 2125
C564 47P
RB543 3300
R558 4700
C566 22P
Q543 2SA1576
C561 F 3216
W604 16P
1 S/S 5V
2 EVER 5V
3 N.C. (FADER CONT)
4 N.C.
5 UN(COSMO CS)
6 UN(DDS SCK)
7 DDS SO
8 DDS SI
9 UN(SYSTEM RESET)
10 UN(CAM ADJ)
11 SERIAL CONT
12 EVF W
13 UN(ZOOM T)
14 UN(ZOOM W)
15 UN(EDIT SW)
16 S/S GND
JL565
JL561
JL559
JL562
JL563
JL564
JL569
JL571
JL570
FP-184 (FLEXIBLE),CN604
TO VC-84 BOARD(3/4) CAM3 (AF,FC) CN802
(See Page 112)

- **SIGNAL PATH**

	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		⊳	
Drum servo (speed and phase)		⊳	
Capstan speed servo			
Capstan phase servo			⟩⟩
Capstan servo (speed and phase)		⟫	
Ref. signal	➤		

- **SIGNAL PATH**

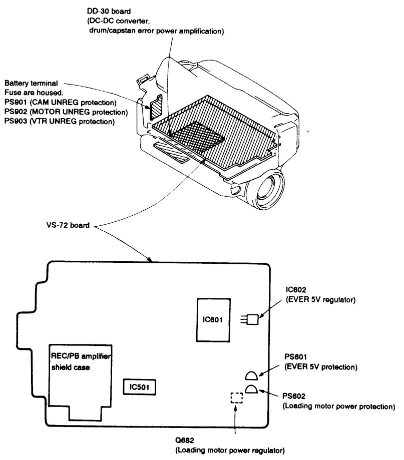
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC				
PB			⇨	


(F-9) Q661 PB RF AMP
(E-10) Q662
(F-10) Q663
ENVELOPE DET
(E-9) Q542 REC ATF LPF
(E-9) Q543 REC ATF LPF
VS-72 BOARD (3/3) SERVO SYSTEM CONTROL

no mark : REC/PB mode
( ) : REC mode
〈 〉 : PB mode
* : can not be measured

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.

[PARTS LOCATION DIAGRAM RELATED TO POWER SUPPLY]


DD-30 board
(DC-DC converter, drum/capstan error power amplification)
Battery terminal
Fuse are housed.
PS901 (CAM UNREG protection)
PS902 (MOTOR UNREG protection)
PS903 (VTR UNREG protection)
VS-72 board
IC602 (EVER 5V regulator)
IC601
REC/PB amplifier shield case
IC501
PS601 (EVER 5V protection)
PS602 (Loading motor power protection)
Q682 (Loading motor power regulator)

AU-95 (AUDIO), MA-73 (MIC AMP), EL-11 (REMOTE JACK) SCHEMATIC DIAGRAMS

—Ref. No. AU-95, EL-11 Boards: 6000 series, MA-73 Board: 7000 series—

- **For printed wiring boards.**
- AU-95, MA-73 and EL-11 boards are the printed wiring boards each of which has four layers structure but inner two layers' patterns are omitted.
- Through hole (⊗) is omitted.

DIODE

D402	8-719-420-15	DIODE MA8082-M(TX)

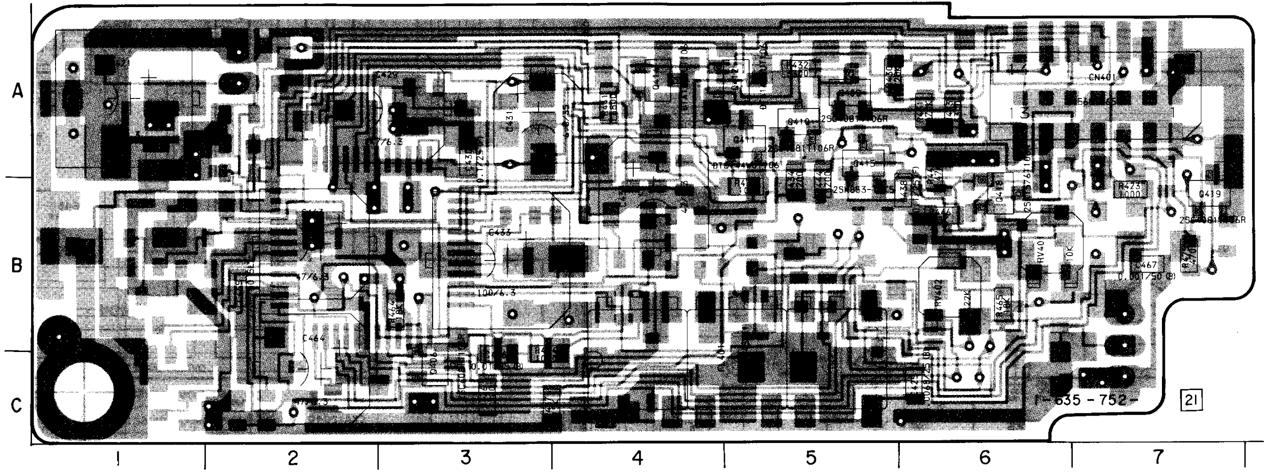
IC

IC401	8-752-033-01	IC CXA1237AR

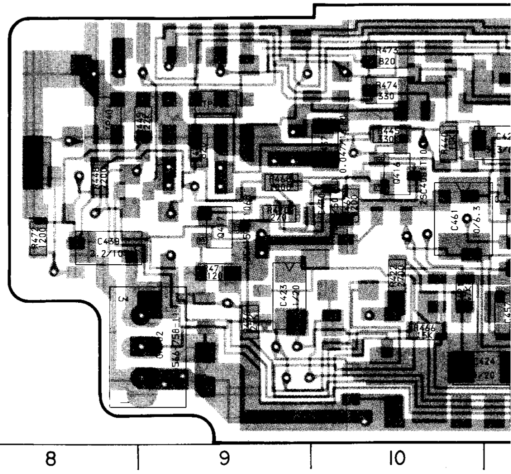
TRANSISTOR

Q406	8-729-117-32	TRANSISTOR 2SC4177
Q409	8-729-117-32	TRANSISTOR 2SC4177
Q410	8-729-117-32	TRANSISTOR 2SC4177
Q411	8-729-905-15	TRANSISTOR DTC144WU
Q412	8-729-905-09	TRANSISTOR DTA144WU
Q413	8-729-117-32	TRANSISTOR 2SC4177
Q414	8-729-905-09	TRANSISTOR DTA144WU
Q415	8-729-821-88	TRANSISTOR 2SK1332-3
Q416	8-729-117-32	TRANSISTOR 2SC4177
Q417	8-729-602-36	TRANSISTOR 2SA1602
Q418	8-729-602-36	TRANSISTOR 2SA1602
Q419	8-729-117-32	TRANSISTOR 2SC4177

AU-95 BOARD (COMPONENT SIDE)



AU-95 BOARD (CONDUCTOR SIDE)



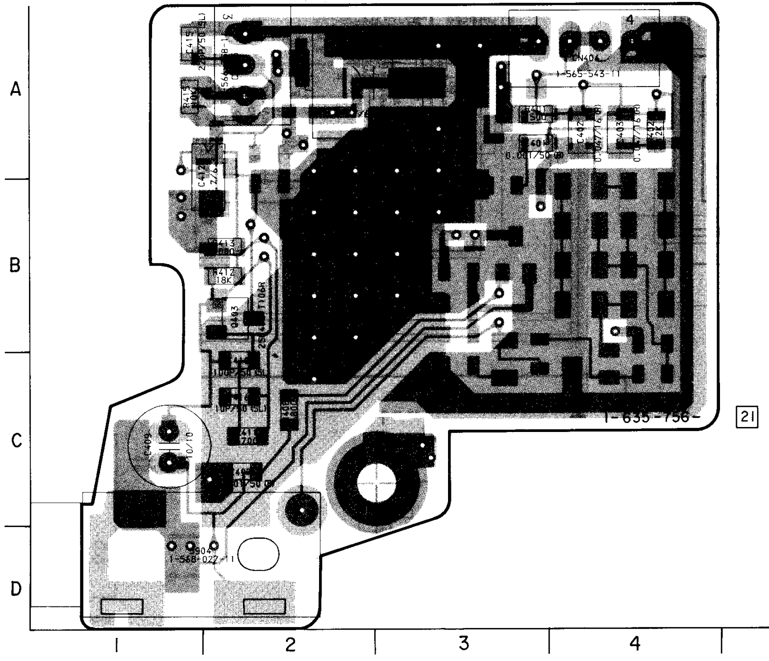
DIODE

D401	8-719-420-15	DIODE MA8082-M(TX)

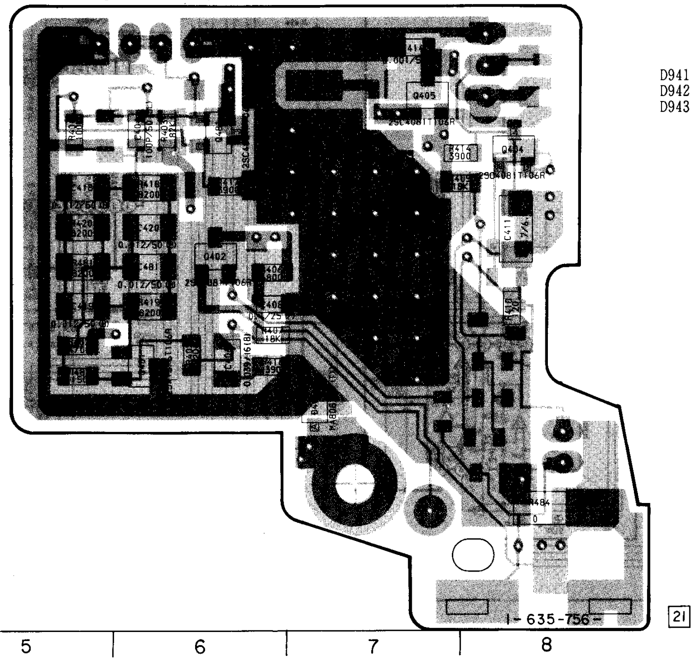
TRANSISTOR

Q401	8-729-905-23	TRANSISTOR 2SA1576R
Q402	8-729-117-32	TRANSISTOR 2SC4177
Q403	8-729-905-35	TRANSISTOR 2SC4081R
Q404	8-729-117-32	TRANSISTOR 2SC4177
Q405	8-729-117-32	TRANSISTOR 2SC4177
Q481	8-729-905-35	TRANSISTOR 2SC4081T106R

MA-73 BOARD (COMPONENT SIDE)



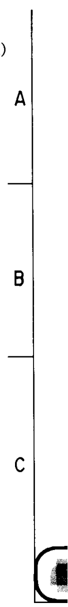
MA-73 BOARD (CONDUCTOR SIDE)



EL-

DIODE

D941	8-719-420-15	DIODE MA8082-M(TX)
D942	8-719-106-71	DIODE RD12M-B2
D943	8-719-404-46	DIODE MA110

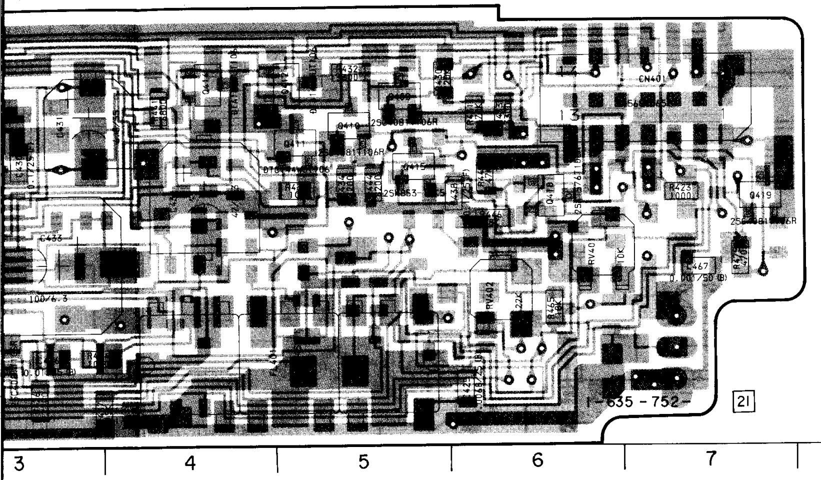


CK) SCHEMATIC DIAGRAMS
000 series—

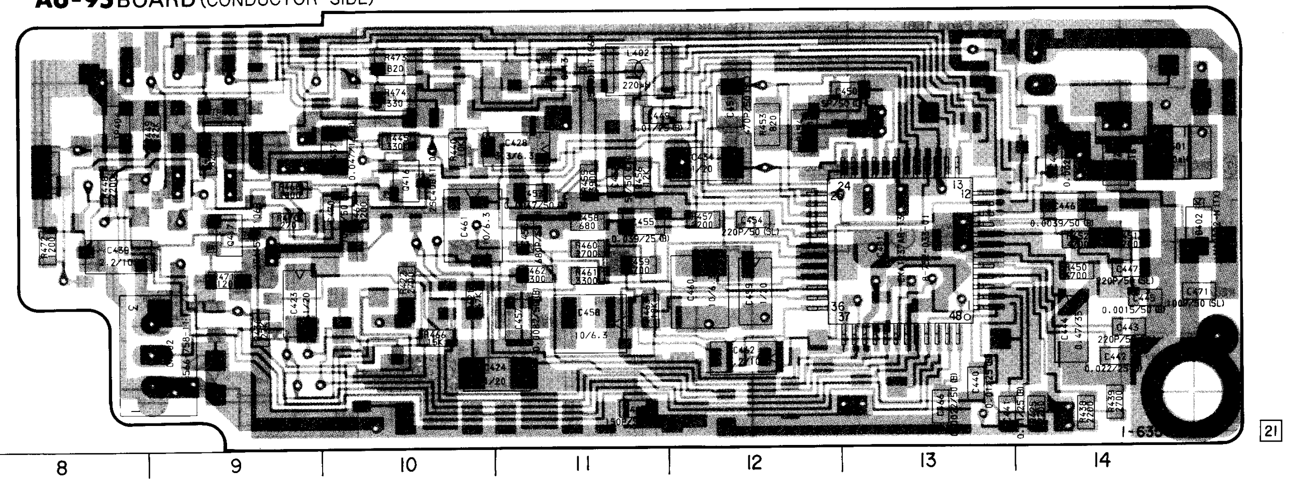
- **For printed wiring boards.**
- AU-95, MA-73 and EL-11 boards are the printed wiring boards each of which has four layers structure but inner two layers' patterns are omitted.
- Through hole (⊗) is omitted.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.


1-635-752-
21
3
4
5
6
7

AU-95 BOARD (CONDUCTOR SIDE)


8
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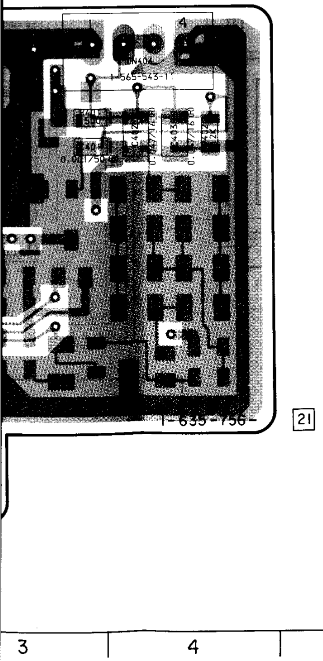
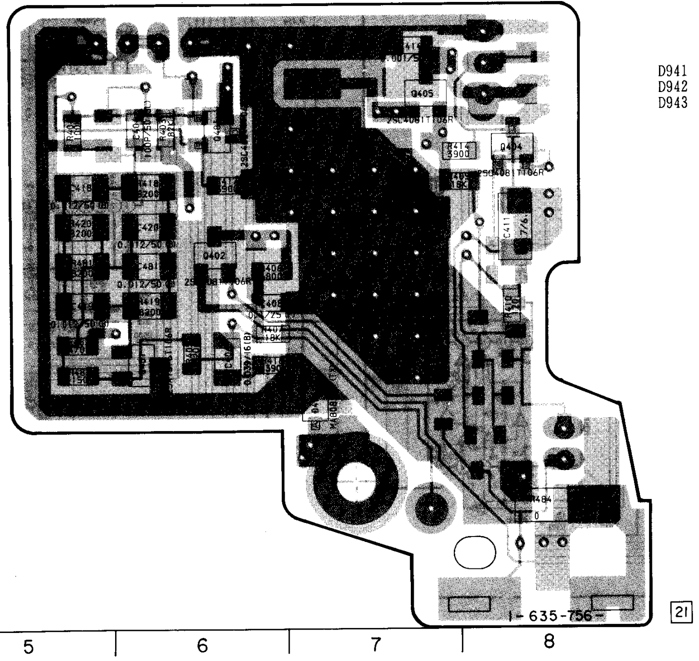
14
21


1-565-543-11
1-635-756-
21
3
4

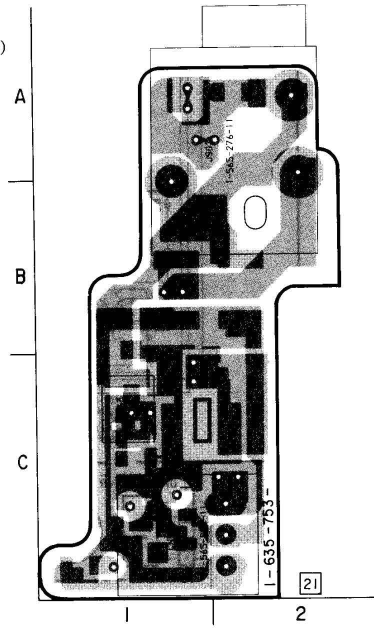
MA-73 BOARD (CONDUCTOR SIDE)


1-635-756-
21
5
6
7
8

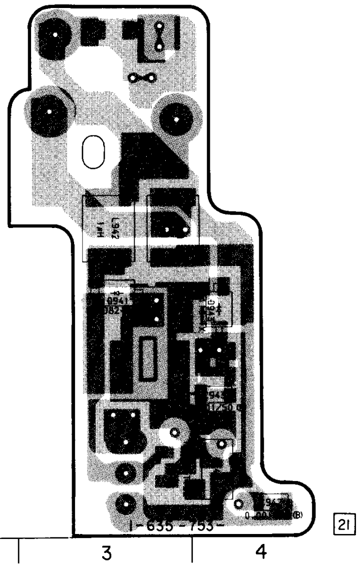
DIODE

D941	8-719-420-15	DIODE MA8082-M(TX)
D942	8-719-106-71	DIODE RD12M-B2
D943	8-719-404-46	DIODE MA110

EL-11 BOARD (COMPONENT SIDE)

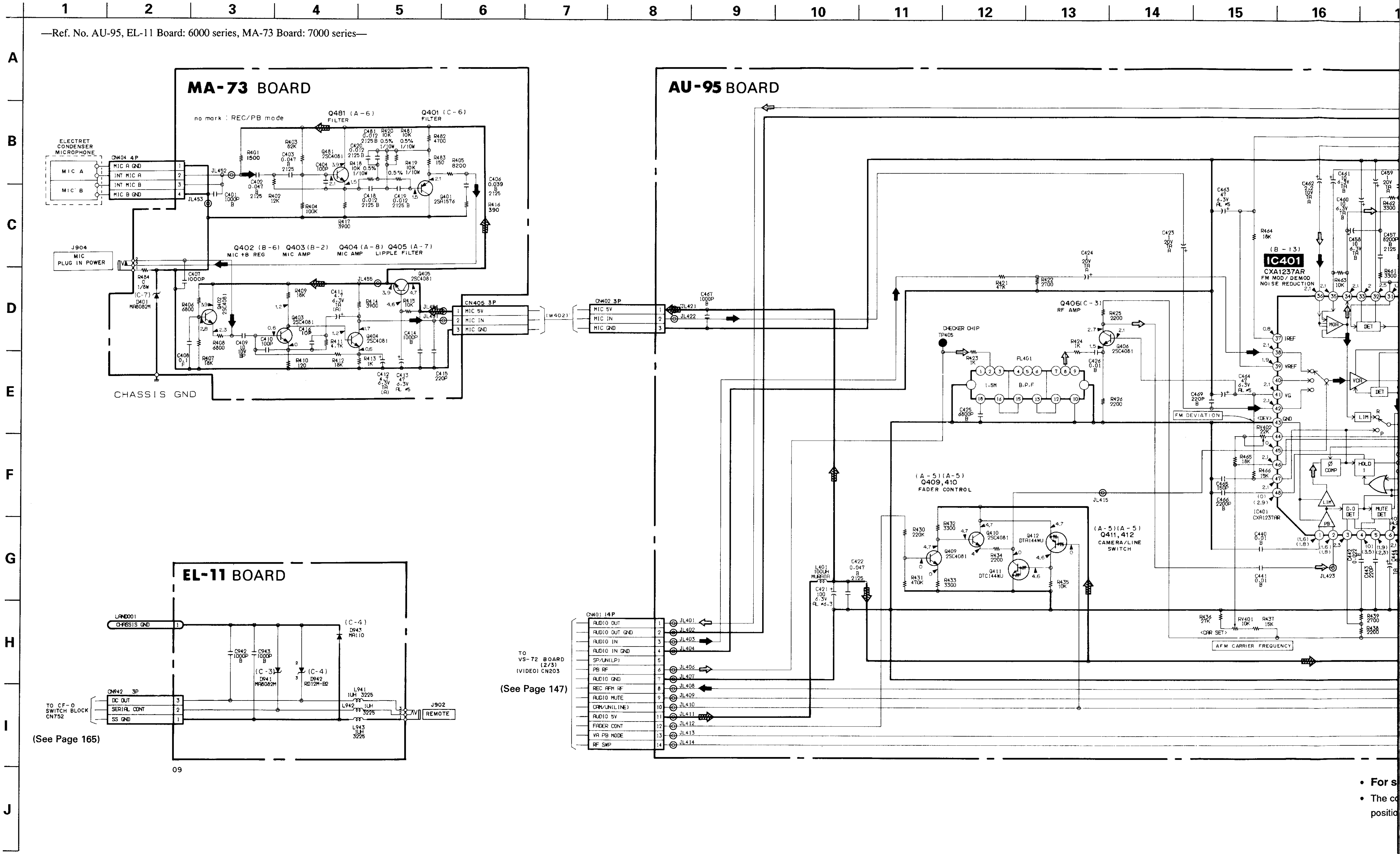

A
B
C
1-565-276-11
1-635-753-
21
1
2

EL-11 BOARD (CONDUCTOR SIDE)


1-635-753-
21
3
4

AU-95 (AUDIO), MA-73 (MIC AMP), EL-11 (REMOTE JACK) PRINTED WIRING BOARDS

—Ref. No. AU-95, EL-11 Board: 6000 series, MA-73 Board: 7000 series—



1
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16
A
B
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D
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F
G
H
I
J
MA-73 BOARD
no mark : REC/PB mode
ELECTRET CONDENSER MICROPHONE
MIC A
MIC B
CN404 4P
MIC A GND
INT MIC A
INT MIC B
MIC B GND
JL452
JL453
Q481 (A-6) FILTER
Q401 (C-6) FILTER
R401 1500
R403 82K
C403 0.047 B 2125
C402 0.047 B 2125
C401 1000P B
R402 12K
R404 100K
R417 3900
R482 4700
R483 150
R405 8200
C406 0.039 B 2125
R416 390
Q481 2SC4081
Q401 2SA1576
C404 100P
R418 10K 0.5% 1/10W
R419 10K 0.5% 1/10W
R420 10K 0.5% 1/10W
R481 10K 0.5% 1/10W
C481 0.012 2125 B
C420 0.012 2125 B
C418 0.012 2125 B
C419 0.012 2125 B
J904 MIC PLUG IN POWER
R484 0 1/8W
(C-7) D401 MA8082M
C407 1000P
Q402 (B-6) MIC +B REG
Q403 (B-2) MIC AMP
Q404 (A-8) MIC AMP
Q405 (A-7) LIPPLE FILTER
Q402 2SC4081
Q403 2SC4081
Q404 2SC4081
Q405 2SC4081
R406 6800
R408 6800
C408 0.1 F
R407 18K
C409 10 10V BP
C410 100P
C416 10P
R409 18K
C411 4.7 6.3V TA (A)
R414 3900
R415 10K
R411 4.7K
R410 120
R412 18K
R413 1K
C412 4.7 6.3V TA (A)
C413 47 6.3V AL #5
C414 1000P B
C415 220P
JL455
JL454
JL451
CN405 3P
MIC 5V
MIC IN
MIC GND
(W402)
CHASSIS GND
EL-11 BOARD
LAND001
CHASSIS GND
C942 1000P B
C943 1000P B
(C-3) D941 MA8082M
(C-4) D942 RD12M-B2
(C-4) D943 MA110
CN942 3P
DC OUT
SERIAL CONT
SS GND
TO CF-0 SWITCH BLOCK CN752
(See Page 165)
L941 1UH 3225
L942 1UH 3225
L943 1UH 3225
J902 REMOTE
09
AU-95 BOARD
CN402 3P
MIC 5V
MIC IN
MIC GND
JL421
JL422
C467 1000P B
CHECKER CHIP TP405
R423 1K
FL401
B.P.F
1.5M
C425 6800P B
R421 47K
R422 2700
C424 20V TA A
C423 20V TA A
Q406 (C-3) RF AMP
Q406 2SC4081
R425 2200
R424 1K
C426 0.01 B
R426 2200
(A-5)(A-5) Q409,410 FADER CONTROL
R430 220K
R431 470K
R432 3300
R433 3300
R434 2200
R435 10K
Q409 2SC4081
Q410 2SC4081
Q411 DTC144WU
Q412 DTA144WU
(A-5)(A-5) Q411,412 CAMERA/LINE SWITCH
JL415
L401 100UH MURATA
C421 100 6.3V AL #6.3
C422 0.047 B 2125
CN401 14P
AUDIO OUT
AUDIO OUT GND
AUDIO IN
AUDIO IN GND
SP/LN(LP)
PB RF
AUDIO GND
REC AFM RF
AUDIO MUTE
CAM/LN(LINE)
AUDIO 5V
FADER CONT
VA PB MODE
RF SWP
JL401
JL402
JL403
JL404
JL406
JL407
JL408
JL409
JL410
JL411
JL412
JL413
JL414
TO VS-72 BOARD (2/3) (VIDEO) CN203
(See Page 147)
(B-13) IC401 CXA1237AR FM MOD/DEMOD NOISE REDUCTION
C463 47 6.3V AL #5
R464 18K
C462 2.2 10V TA A
C461 10 6.3V TA B
C459 20V TA A
C460 10 6.3V TA B
C458 10 6.3V TA B
R442 3300
C457 8200P B 2125
R461 3300
R463 10K
IREF
VREF
VG
GND
<DEV>
FM DEVIATION
RV402 22K
R465 18K
R466 15K
C464 47 6.3V AL #5
C469 220P B
C468 150P
C466 2200P B
IC401 CXA1237AR
C440 0.01 B
C441 0.01 B
C442 0.022
C443 2200
JL423
MOR
DET
VCO
LIM
Ø COMP
HOLD
D.O DET
MUTE DET
PB
R436 27K
RV401 10K
R437 15K
<CAR SET>
AFM CARRIER FREQUENCY
R439 2700
R438 2200

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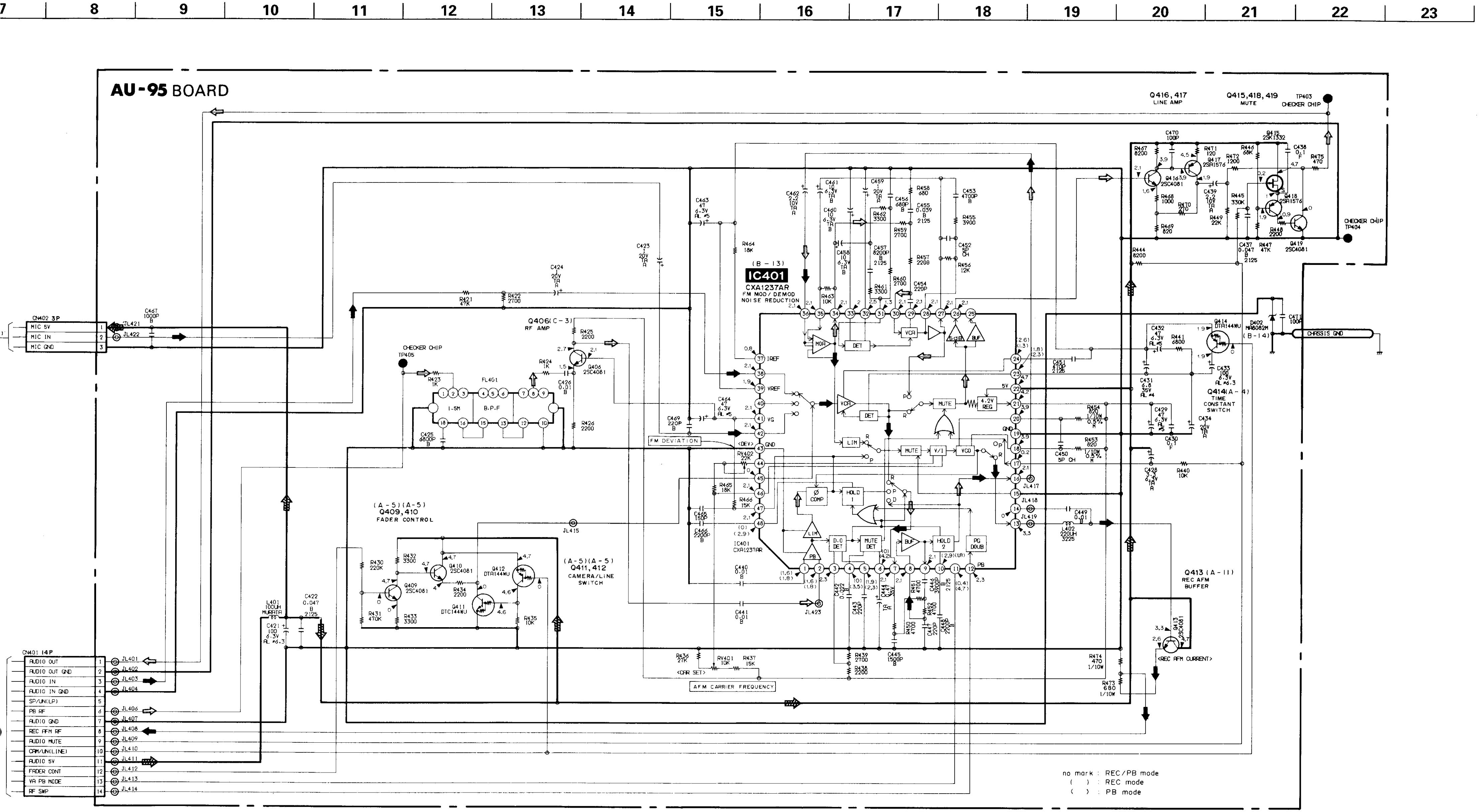
7
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22
23
AU-95 BOARD
CN402 3P
MIC 5V
MIC IN
MIC GND
JL421
JL422
C467 1000P B
CN401 14P
AUDIO OUT
AUDIO OUT GND
AUDIO IN
AUDIO IN GND
SP/LN(LP)
PB RF
AUDIO GND
REC AFM RF
AUDIO MUTE
CAM/LN(LINE)
AUDIO 5V
FADER CONT
VA PB MODE
RF SWP
JL401
JL402
JL403
JL404
JL406
JL407
JL408
JL409
JL410
JL411
JL412
JL413
JL414
(B-13)
IC401
CXA1237AR
FM MOD/DEMOD
NOISE REDUCTION
Q406 (C-3)
RF AMP
2SC4081
CHECKER CHIP
TP405
FL401
1.5M
B.P.F
(A-5)(A-5)
Q409,410
FADER CONTROL
(A-5)(A-5)
Q411,412
CAMERA/LINE
SWITCH
2SC4081
DTA144WU
DTC144WU
JL415
L401
100UH
MURATA
FM DEVIATION
<DEV>
RV402
22K
RV401
10K
<CAR SET>
AFM CARRIER FREQUENCY
IREF
VREF
VG
GND
MOR
DET
VCR
MUTE
4.2V REG
LIM
V/I
VCO
Ø COMP
HOLD 1
HOLD 2
D.O DET
MUTE DET
BUF
PG DOUB
PB
JL417
JL418
JL419
JL423
L402
220UH
Q416,417
LINE AMP
Q415,418,419
MUTE
TP403
CHECKER CHIP
CHECKER CHIP
TP404
2SK1332
2SA1576
2SC4081
Q414
DTA144WU
(B-14)
D402
MA8082M
CHASSIS GND
Q414 (A-4)
TIME
CONSTANT
SWITCH
Q413 (A-11)
REC AFM
BUFFER
<REC AFM CURRENT>

no mark : REC/PB mode
( ) : REC mode
( ) : PB mode

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.

• **SIGNAL PATH**

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC				➡
PB				⇨

FP-115 (TAPE TOP/END SENSOR/TAPE SELECT), SW-161 (BACK LIGHT SWITCH) PRINTED WIRING BOARDS

—Ref. No. FP-115, SW-161 Boards: 8000 series—

DIODE

D991	8-719-951-03	DIODE GL453

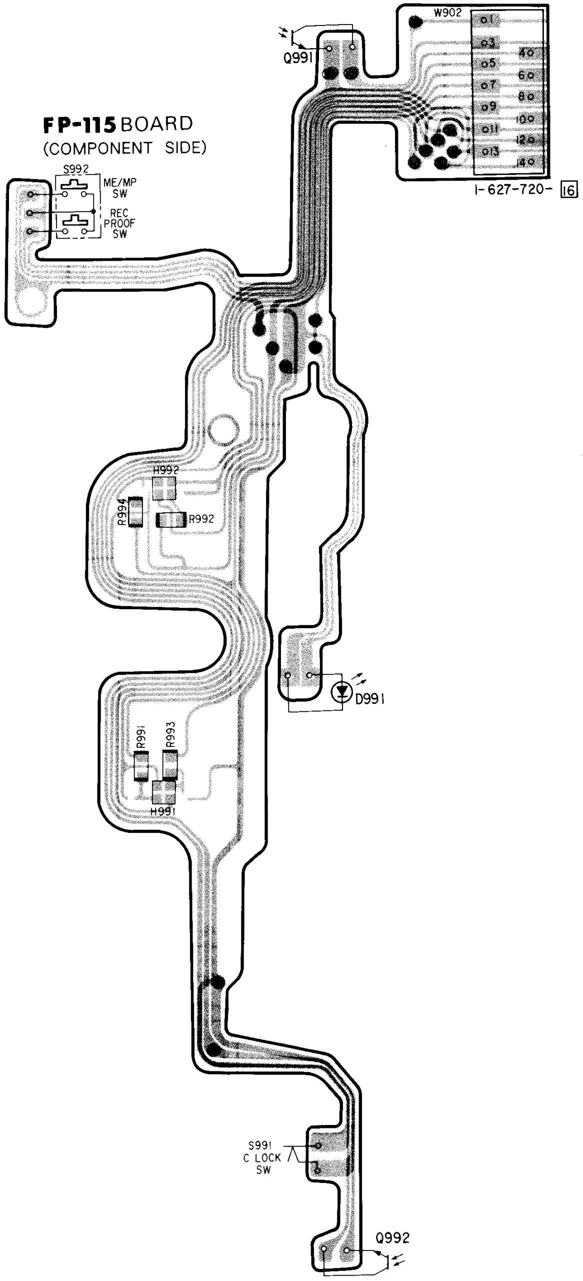
ELEMENT HALL

H991	1-808-448-11	ELEMENT, HALL (CHIP TYPE)
H992	1-808-448-11	ELEMENT, HALL (CHIP TYPE)

TRANSISTOR

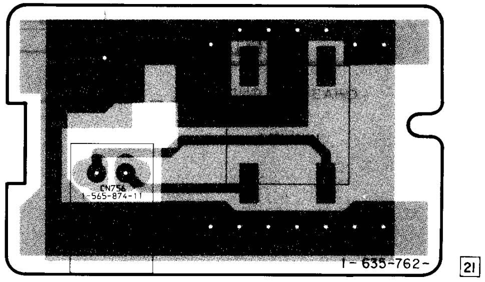
Q991	8-729-907-25	TRANSISTOR PT4850F (TAPE TOP)
Q992	8-729-907-25	TRANSISTOR PT4850F (TAPE END)

FP-115 BOARD
(COMPONENT SIDE)



S992
ME/MP SW
REC PROOF SW
Q991
W902
1
3
4
5
6
7
8
9
10
11
12
13
14
1-627-720- 16
H992
R994
R992
D991
R991
R993
H991
S991
C LOCK SW
Q992

SW-161 BOARD (COMPONENT SIDE)



CN754
1-565-874-11
1-635-762-
21
09

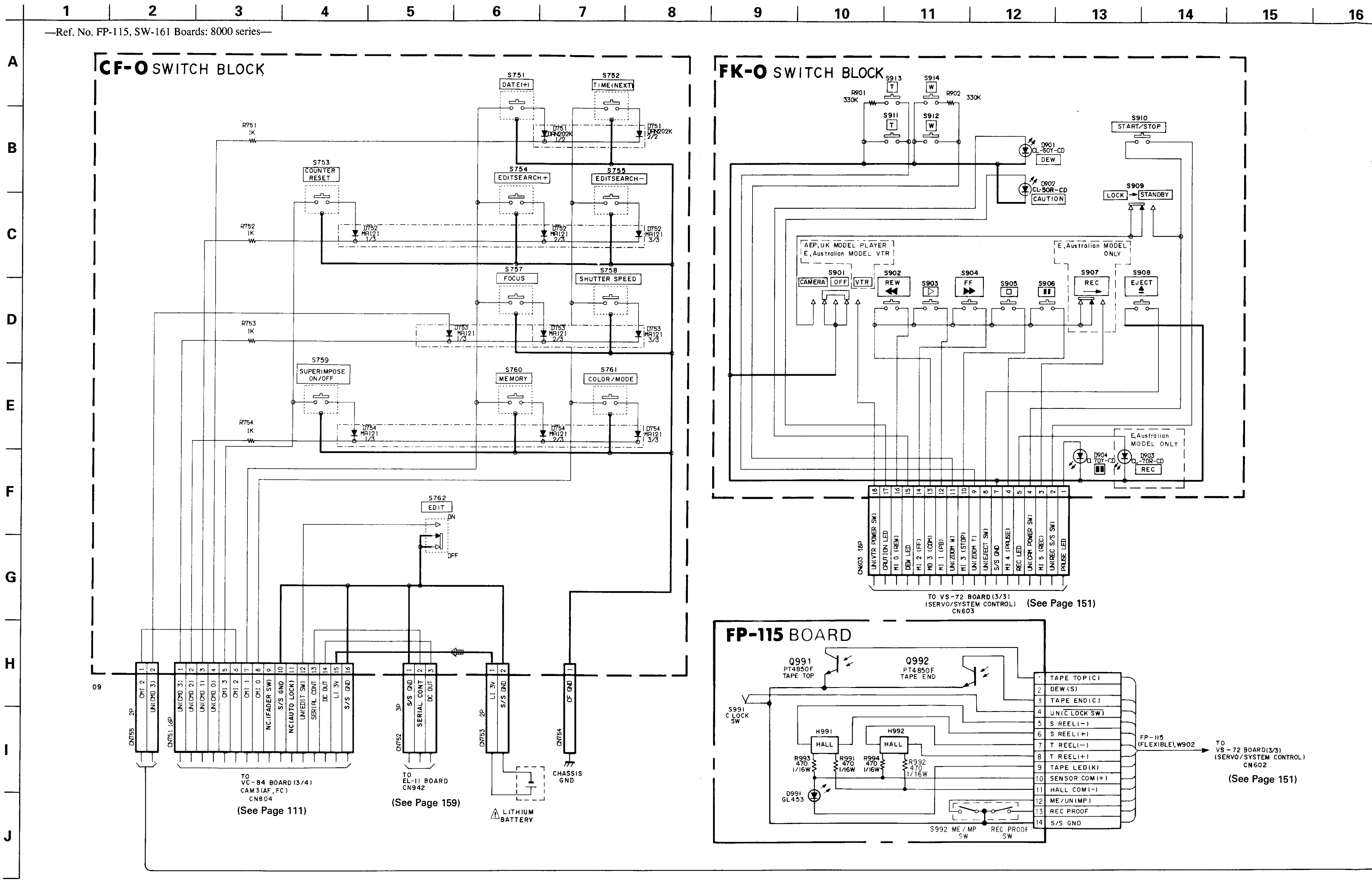
- **For printed wiring boards.**
- Printed wiring boards of CF-0, FK-0 and JK-66 are omitted.
- Through hole (⊗) is omitted.

Caution:

Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

CF-0 (CAMERA FUNCTION SWITCH), FK-0 (VTR FUNCTION SWITCH), JK-66 (VIDEO/AUDIO INPUT/OUTPUT), FP-115 (TAPE TOP/END SENSOR/TAPE SELECT), SW-161 (BACK LIGHT SWITCH) SCHEMATIC DIAGRAMS

—Ref. No. FP-115, SW-161 Boards: 8000 series—

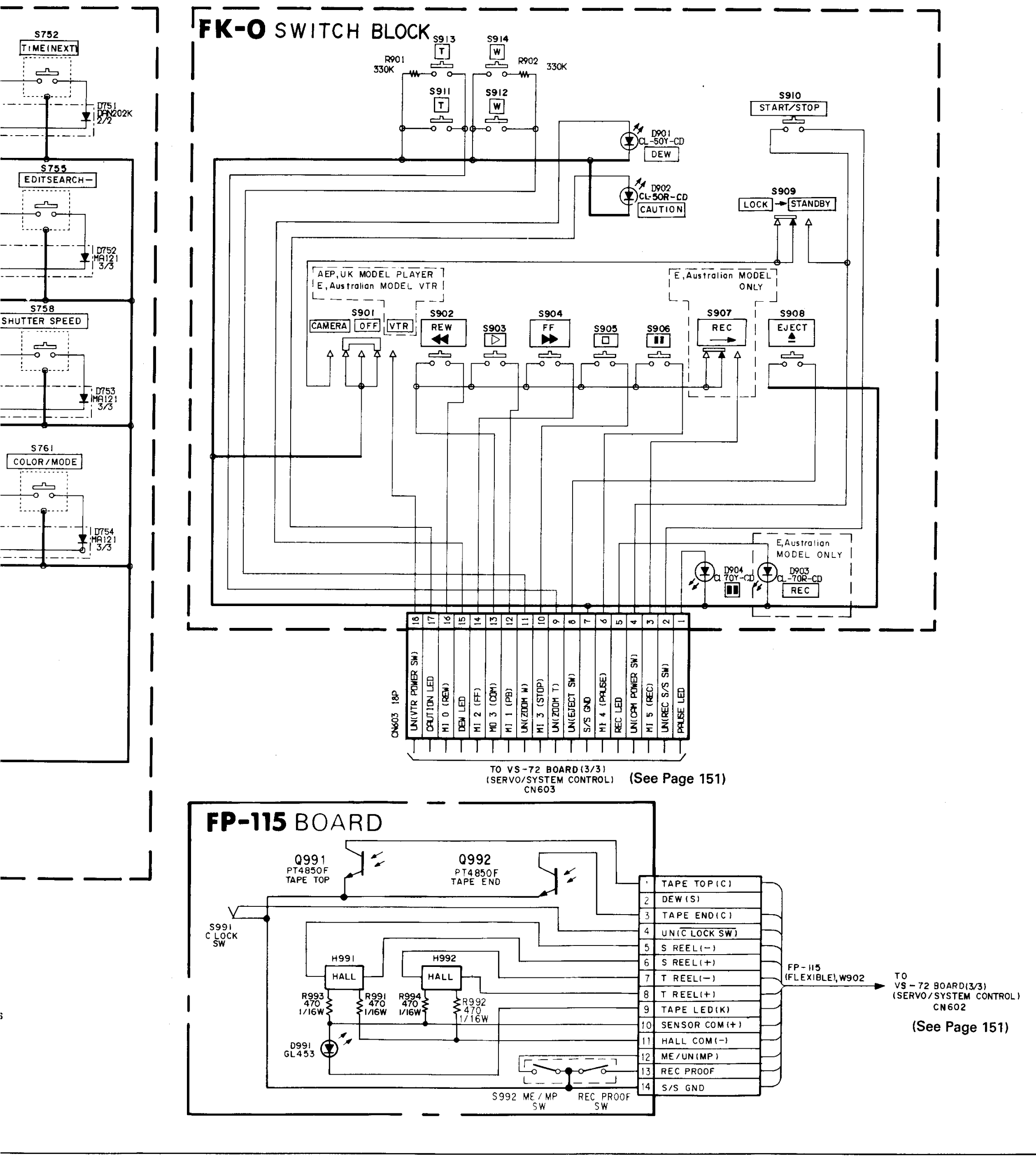

CF-O SWITCH BLOCK
S751 DATE(+)
S752 TIME(NEXT)
D751 DAN202K 1/2
D751 DAN202K 2/2
R751 1K
S753 COUNTER RESET
S754 EDITSEARCH+
S755 EDITSEARCH−
R752 1K
D752 MA121 1/3
D752 MA121 2/3
D752 MA121 3/3
S757 FOCUS
S758 SHUTTER SPEED
R753 1K
D753 MA121 1/3
D753 MA121 2/3
D753 MA121 3/3
S759 SUPERIMPOSE ON/OFF
S760 MEMORY
S761 COLOR/MODE
R754 1K
D754 MA121 1/3
D754 MA121 2/3
D754 MA121 3/3
S762 EDIT
ON
OFF
09
CN755 2P
1 CMI 2
2 UN(CMO 3)
CN751 16P
1 UN(CMO 3)
2 UN(CMO 2)
3 UN(CMO 1)
4 UN(CMO 0)
5 CMI 3
6 CMI 2
7 CMI 1
8 CMI 0
9 NC.(FADER SW)
10 S/S GND
11 NC(AUTO LOCK)
12 UN(EDIT SW)
13 SERIAL CONT
14 DC OUT
15 LI 3V
16 S/S GND
TO VC-84 BOARD (3/4) CAM3(AF, FC) CN804
(See Page 111)
CN752 3P
1 S/S GND
2 SERIAL CONT
3 DC OUT
TO EL-11 BOARD CN942
(See Page 159)
CN753 2P
1 LI 3V
2 S/S GND
LITHIUM BATTERY
CN754
1 CF GND
CHASSIS GND
FK-O SWITCH BLOCK
S913 T
S914 W
R901 330K
R902 330K
S911 T
S912 W
D901 CL-50Y-CD DEW
D902 CL-50R-CD CAUTION
S910 START/STOP
S909 LOCK → STANDBY
AEP,UK MODEL PLAYER
E,Australian MODEL VTR
E,Australian MODEL ONLY
S901 CAMERA OFF VTR
S902 REW
S903
S904 FF
S905
S906
S907 REC
S908 EJECT
E,Australian MODEL ONLY
D904 70Y-CD
D903 CL-70R-CD REC
CN603 18P
18 UN(VTR POWER SW)
17 CAUTION LED
16 MI 0 (REW)
15 DEW LED
14 MI 2 (FF)
13 MO 3 (COM)
12 MI 1 (PB)
11 UN(ZOOM W)
10 MI 3 (STOP)
9 UN(ZOOM T)
8 UN(EJECT SW)
7 S/S GND
6 MI 4 (PAUSE)
5 REC LED
4 UN(CAM POWER SW)
3 MI 5 (REC)
2 UN(REC S/S SW)
1 PAUSE LED
TO VS-72 BOARD(3/3) (SERVO/SYSTEM CONTROL) CN603
(See Page 151)
FP-115 BOARD
Q991 PT4850F TAPE TOP
Q992 PT4850F TAPE END
S991 C LOCK SW
H991 HALL
H992 HALL
R993 470 1/16W
R991 470 1/16W
R994 470 1/16W
R992 470 1/16W
D991 GL453
S992 ME/MP SW
REC PROOF SW
1 TAPE TOP(C)
2 DEW(S)
3 TAPE END(C)
4 UN(C LOCK SW)
5 S REEL(−)
6 S REEL(+)
7 T REEL(−)
8 T REEL(+)
9 TAPE LED(K)
10 SENSOR COM(+)
11 HALL COM(−)
12 ME/UN(MP)
13 REC PROOF
14 S/S GND
FP-115 (FLEXIBLE),W902
TO VS-72 BOARD(3/3) (SERVO/SYSTEM CONTROL) CN602
(See Page 151)

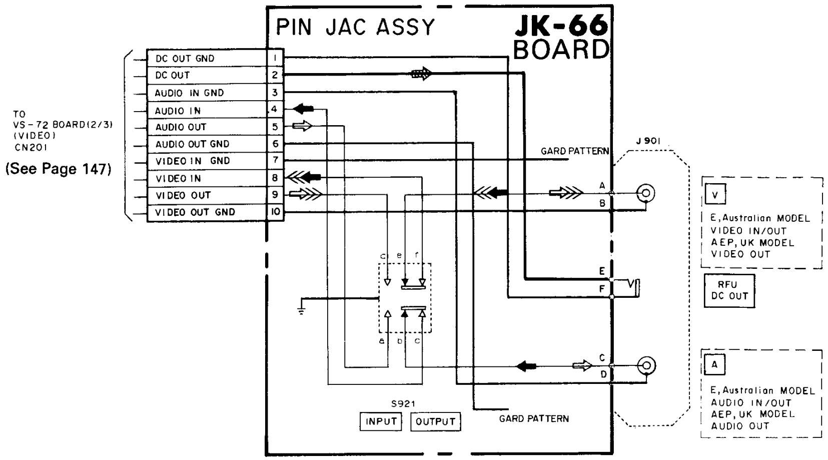
TO
VS-72 BOARD(2/3
(VIDEO)
CN201
(See Page 147

[Video/au

Switch S921
For AEP/UK
position.
For AEP/UK
models by s

- **For sche**
- The code
position of

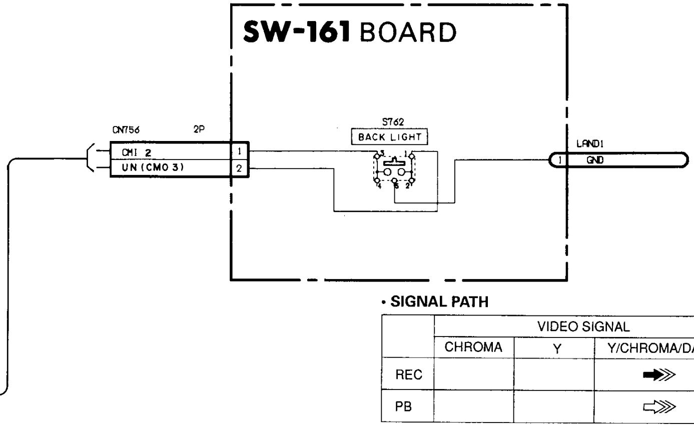

S752
TIME(NEXT)
D751
DAN202K
2/2
S755
EDITSEARCH−
D752
MA121
3/3
S758
SHUTTER SPEED
D753
MA121
3/3
S761
COLOR/MODE
D754
MA121
3/3
FK-0 SWITCH BLOCK
S913
T
S914
W
R901
330K
R902
330K
S911
T
S912
W
D901
CL-50Y-CD
DEW
D902
CL-50R-CD
CAUTION
S910
START/STOP
S909
LOCK
STANDBY
AEP,UK MODEL PLAYER
E,Australian MODEL VTR
E,Australian MODEL ONLY
S901
CAMERA
OFF
VTR
S902
REW
S903
S904
FF
S905
S906
S907
REC
S908
EJECT
E,Australian MODEL ONLY
D904
70Y-CD
D903
CL-70R-CD
REC
CN603 18P
18 UN(VTR POWER SW)
17 CAUTION LED
16 MI 0 (REW)
15 DEW LED
14 MI 2 (FF)
13 MO 3 (COM)
12 MI 1 (PB)
11 UN(ZOOM W)
10 MI 3 (STOP)
9 UN(ZOOM T)
8 UN(EJECT SW)
7 S/S GND
6 MI 4 (PAUSE)
5 REC LED
4 UN(CAM POWER SW)
3 MI 5 (REC)
2 UN(REC S/S SW)
1 PAUSE LED
TO VS-72 BOARD(3/3)
(SERVO/SYSTEM CONTROL)
CN603
(See Page 151)
FP-115 BOARD
Q991
PT4850F
TAPE TOP
Q992
PT4850F
TAPE END
S991
C LOCK
SW
H991
HALL
H992
HALL
R993
470
1/16W
R991
470
1/16W
R994
470
1/16W
R992
470
1/16W
D991
GL453
1 TAPE TOP(C)
2 DEW(S)
3 TAPE END(C)
4 UN(C LOCK SW)
5 S REEL(−)
6 S REEL(+)
7 T REEL(−)
8 T REEL(+)
9 TAPE LED(K)
10 SENSOR COM(+)
11 HALL COM(−)
12 ME/UN(MP)
13 REC PROOF
14 S/S GND
S992 ME/MP SW
REC PROOF SW
FP-115 (FLEXIBLE),W902
TO VS-72 BOARD(3/3)
(SERVO/SYSTEM CONTROL)
CN602
(See Page 151)


PIN JAC ASSY
JK-66 BOARD
TO VS-72 BOARD(2/3)
(VIDEO)
CN201
(See Page 147)
1 DC OUT GND
2 DC OUT
3 AUDIO IN GND
4 AUDIO IN
5 AUDIO OUT
6 AUDIO OUT GND
7 VIDEO IN GND
8 VIDEO IN
9 VIDEO OUT
10 VIDEO OUT GND
GARD PATTERN
J901
A
B
E
F
C
D
V
E,Australian MODEL VIDEO IN/OUT
AEP,UK MODEL VIDEO OUT
RFU DC OUT
A
E,Australian MODEL AUDIO IN/OUT
AEP,UK MODEL AUDIO OUT
S921
INPUT
OUTPUT
GARD PATTERN

[Video/audio input/output switch (S921 on the JK-66 board) – for AEP/UK model]

Switch S921 is mounted on the JK-66 board, regardless of the destinations.
For AEP/UK model, however, the output cover is provided that won't be attached at the input position.
For AEP/UK model, S921 will function as IN/OUT switch of the video/audio like AUS and E models by switching with the cabinet(L)assembly removed.

- **For schematic diagrams.**
- The code shown like (C-9) for each semiconductor indicates the position of location address on the printed wiring board.


SW-161 BOARD
CN756
2P
1 CMI 2
2 UN (CMO 3)
S762
BACK LIGHT
LND01
1 GND

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC			➡≫	➡
PB			⇨≫	⇨

VF-40 (ELECTRICAL VIEW FINDER) PRINTED WIRING BOARDS

—Ref. No. VF-40 Board: 9000 series —

DIODE

D951	8-719-820-65	DIODE TLS221
D952	8-719-800-60	DIODE TLR214
D953	8-719-400-20	DIODE MA152WA

IC

IC951	8-759-420-01	IC AN2512S

TRANSISTOR

Q953	8-729-216-31	TRANSISTOR 2SA1163G
Q954	8-729-100-67	TRANSISTOR 2SC1623-L7
Q955	8-729-106-68	TRANSISTOR 2SD1615A-GP

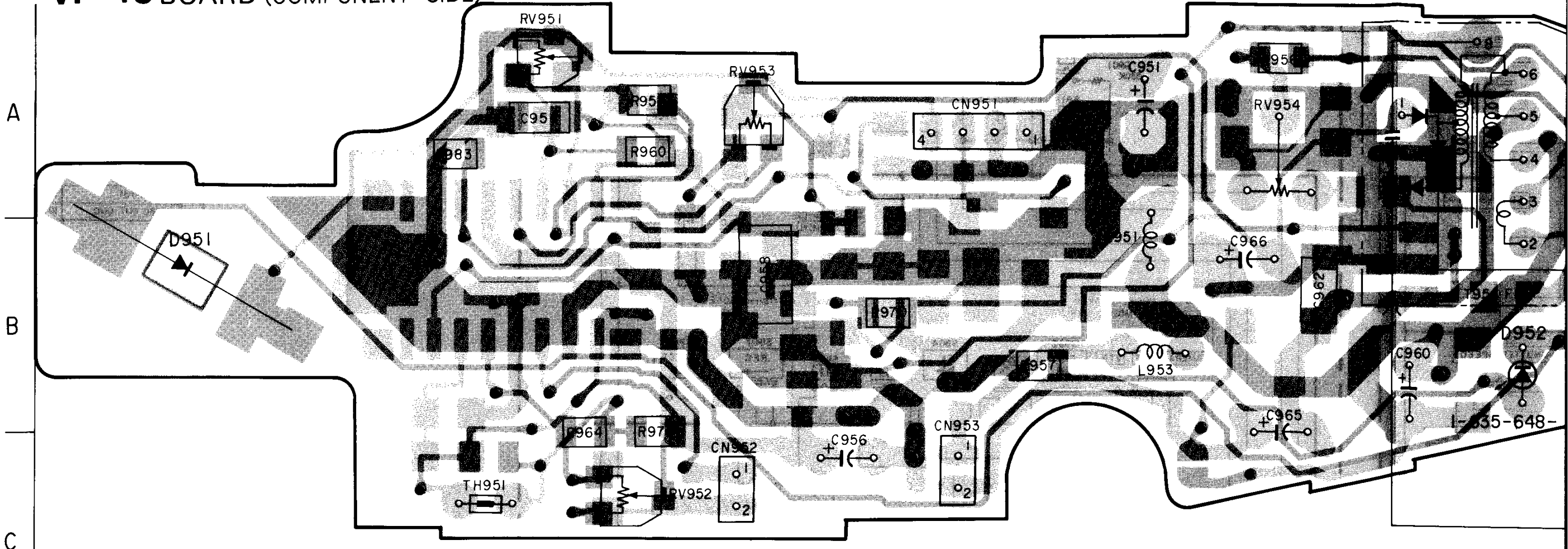
THERMISTOR

TH951	1-807-938-11	THERMISTOR

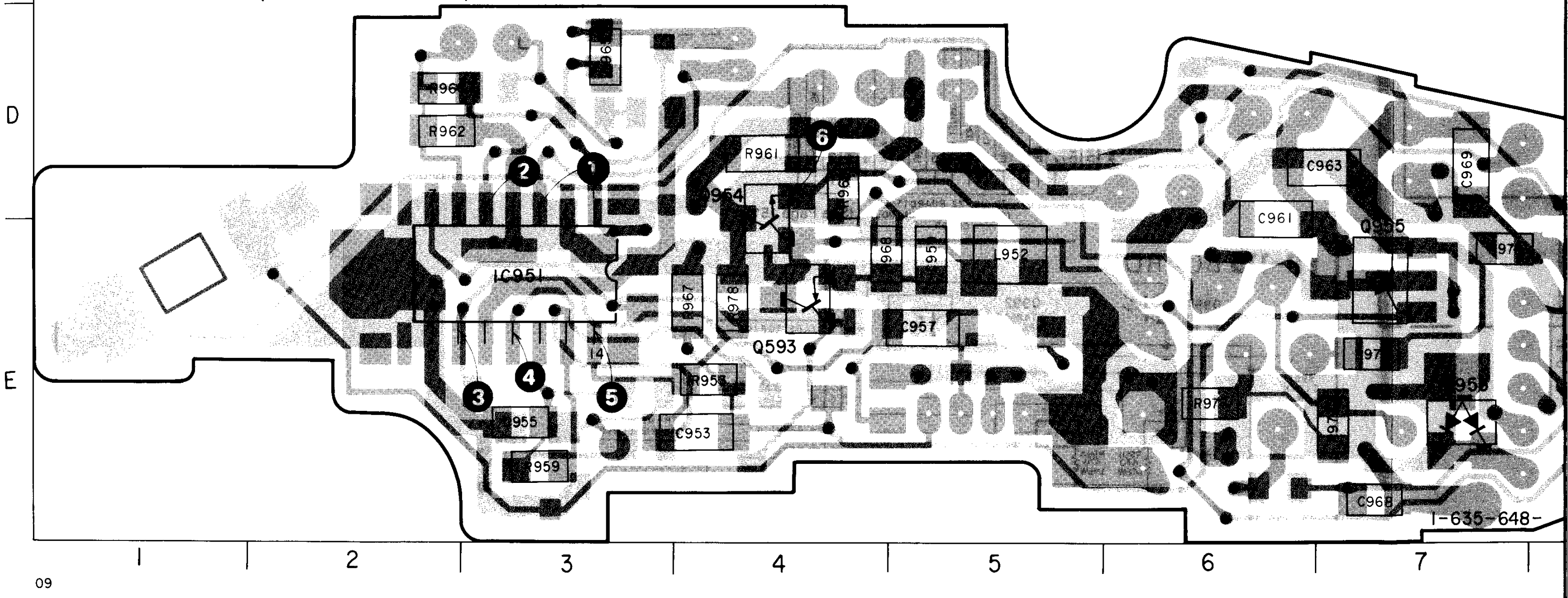
- **For printed wiring boards.**
- ● : Through hole.

Caution:	
Pattern face side: (Conductor Side)	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side: (Component side)	Parts on the parts face side seen from the parts face are indicated.

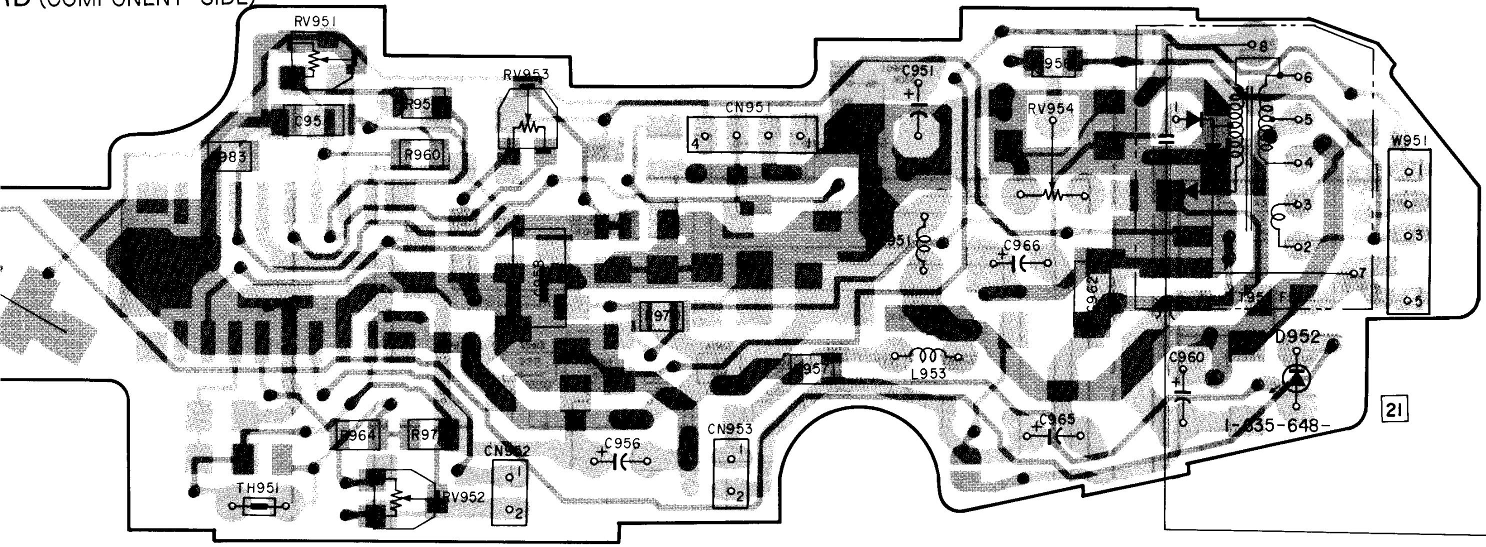
VF-40 BOARD (COMPONENT SIDE)


A
B
C
RV951
C95
R95
R960
RV953
983
CN951
4
1
C951
RV954
D951
951
C966
Q953
R97
R957
L953
C962
C960
D952
1-635-648-
TH951
R964
R97
CN952
RV952
C956
CN953
C965
1
2
3
4
5
6
8

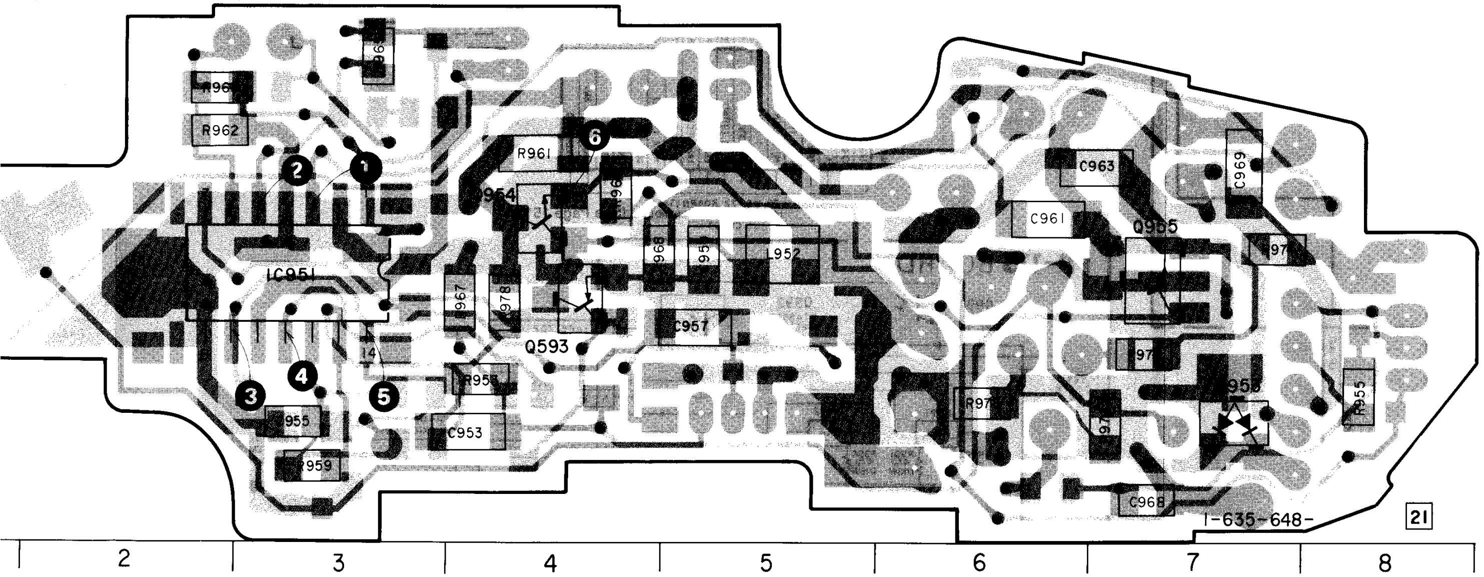
VF-40 BOARD (CONDUCTOR SIDE)

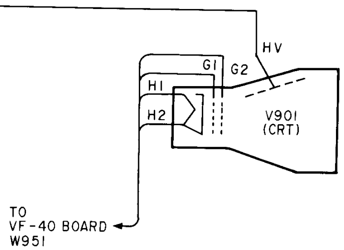

D
E
R96
R962
R961
6
2
1
954
R96
IC951
C963
C969
C961
Q955
L952
C957
Q593
R967
R978
R95
R953
C953
R955
R959
3
4
5
14
R97
C96
1-635-648-
1
2
3
4
5
6
7
09

RD (COMPONENT SIDE)


RV951
RV953
C95
R95
R960
983
CN951
4
1
C951
956
RV954
8
6
5
4
3
2
7
W951
1
3
5
951
C966
C962
T951
979
957
L953
C960
D952
C965
1-635-648-
21
C964
R97
CN952
1
2
C956
CN953
1
2
TH951
RV952

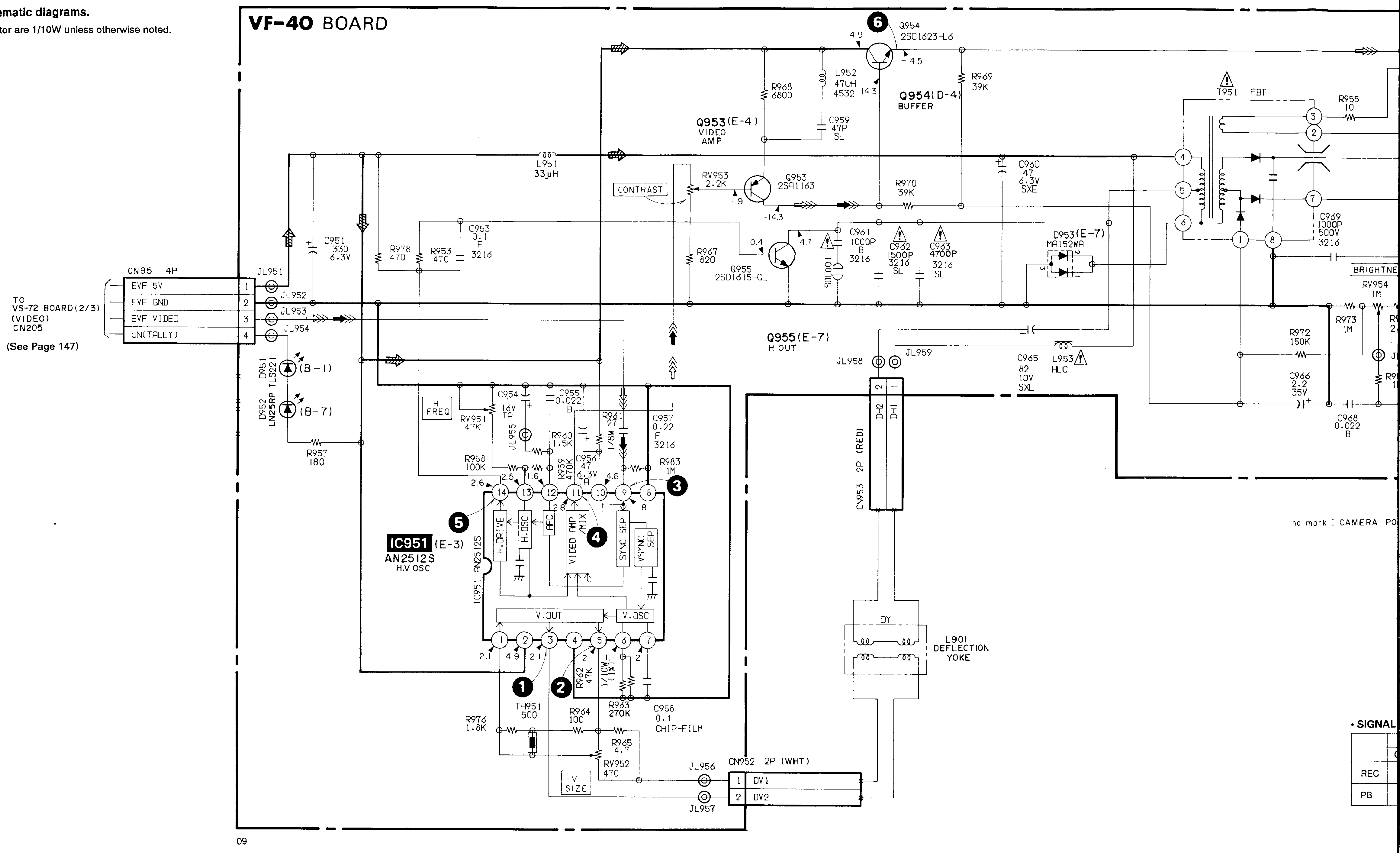
D (CONDUCTOR SIDE)

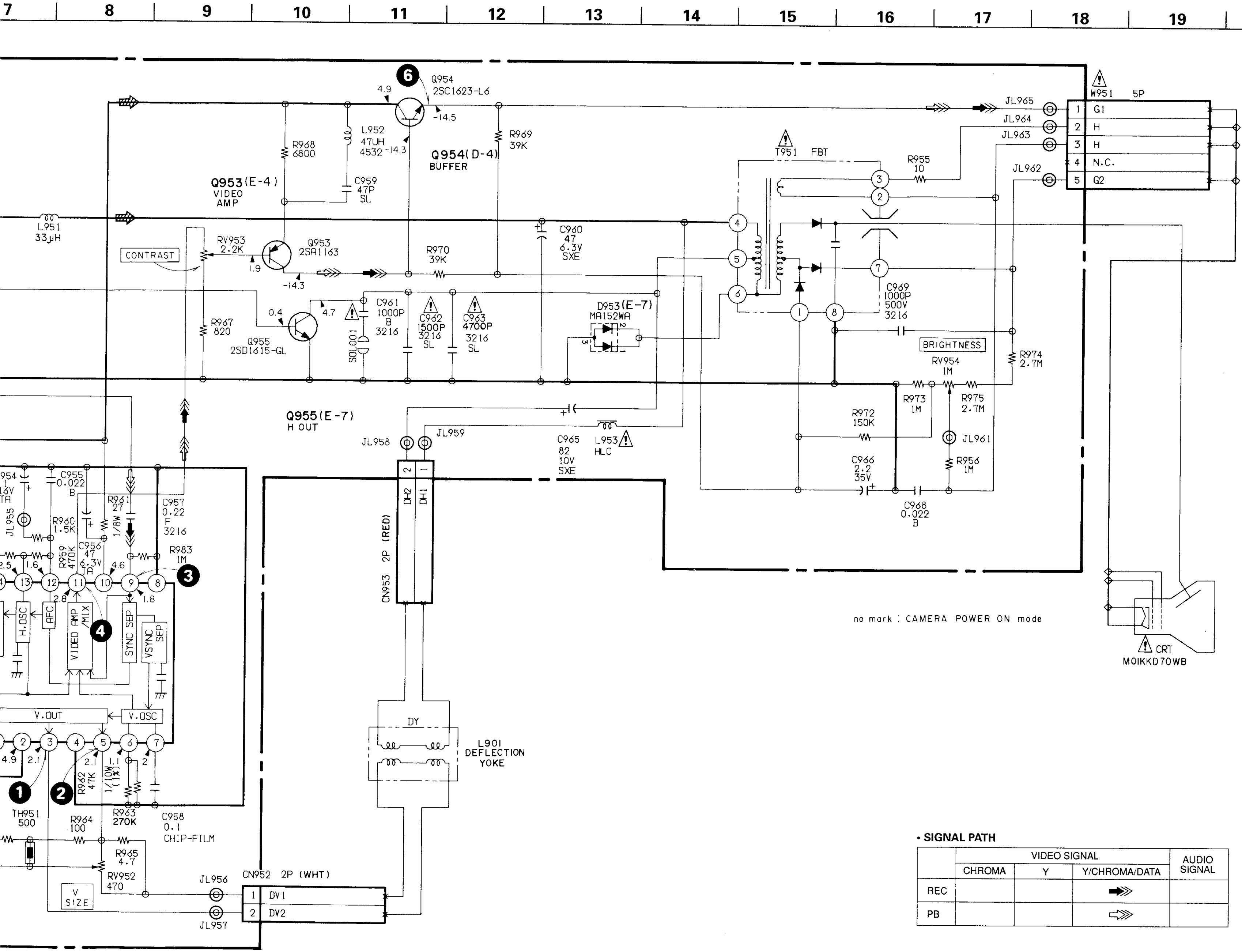

R96
R962
96
❷
❶
R961
❻
954
96
IC951
967
978
968
95
L952
Q593
C957
❸
❹
❺
955
959
R958
C953
C963
C961
Q965
C969
97
97
R97
97
955
R955
C968
1-635-648-
21
2
3
4
5
6
7
8


HV
G1
G2
H1
H2
V901
(CRT)
TO
VF-40 BOARD
W951

—Ref. No. VF-40 Board: 9000 series —

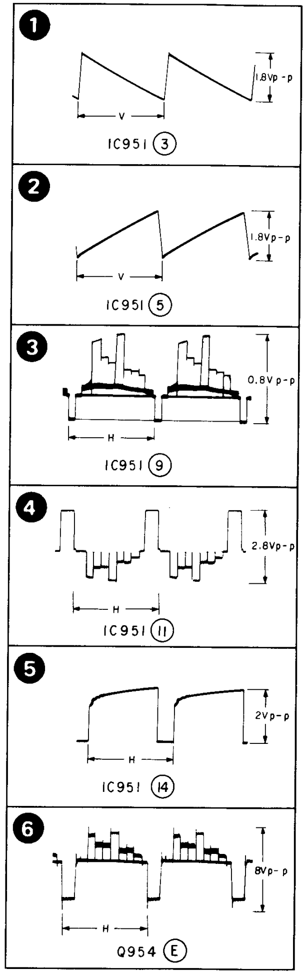
- **For schematic diagrams.**
- Chip resistor are 1/10W unless otherwise noted.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
B
C
D
E
F
G
H
I
J
VF-40 BOARD
Q954
2SC1623-L6
4.9
-14.5
R969
39K
R968
6800
L952
47UH
4532
-14.3
Q954(D-4)
BUFFER
Q953(E-4)
VIDEO
AMP
C959
47P
SL
T951 FBT
R955
10
L951
33μH
RV953
2.2K
Q953
2SA1163
1.9
-14.3
R970
39K
C960
47
6.3V
SXE
CONTRAST
C953
0.1
F
3216
C951
330
6.3V
R978
470
R953
470
R967
820
0.4
4.7
Q955
2SD1615-GL
C961
1000P
B
3216
C962
1500P
3216
SL
C963
4700P
3216
SL
SDL001
D953(E-7)
MA152WA
C969
1000P
500V
3216
BRIGHTNE
RV954
1M
R973
1M
R972
150K
CN951 4P
EVF 5V
EVF GND
EVF VIDEO
UN(TALLY)
TO
VS-72 BOARD(2/3)
(VIDEO)
CN205
(See Page 147)
JL951
JL952
JL953
JL954
D951
TLS221
D952
LN25RP
(B-1)
(B-7)
R957
180
Q955(E-7)
H OUT
JL958
JL959
C965
82
10V
SXE
L953
HLC
C966
2.2
35V
C968
0.022
B
H
FREQ
RV951
47K
C954
1
16V
TA
C955
0.022
B
JL955
R960
1.5K
R961
27
1/8W
C957
0.22
F
3216
R958
100K
R959
470K
C956
47
6.3V
TA
R983
1M
2.6
2.5
1.6
2.8
4.6
1.8
IC951 (E-3)
AN2512S
H.V OSC
IC951 AN2512S
H.DRIVE
H.OSC
AFC
VIDEO AMP/MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
2.1
4.9
2.1
2.1
1.1
2
R962
47K
1/10W
(1%)
R963
270K
C958
0.1
CHIP-FILM
TH951
500
R964
100
R976
1.8K
R965
4.7
RV952
470
V
SIZE
JL956
JL957
CN952 2P (WHT)
DV1
DV2
DH2
DH1
CN953 2P (RED)
DY
L901
DEFLECTION
YOKE
no mark : CAMERA PO
• SIGNAL
REC
PB
09


7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
6
Q954
2SC1623-L6
4.9
-14.5
L952
47UH
4532
-14.3
R968
6800
C959
47P
SL
Q953(E-4)
VIDEO
AMP
Q954(D-4)
BUFFER
R969
39K
L951
33μH
CONTRAST
RV953
2.2K
Q953
2SA1163
1.9
-14.3
R970
39K
C960
47
6.3V
SXE
0.4
4.7
Q955
2SD1615-GL
R967
820
C961
1000P
B
3216
SOL001
C962
1500P
3216
SL
C963
4700P
3216
SL
D953(E-7)
MA152WA
T951 FBT
R955
10
JL965
JL964
JL963
JL962
W951 5P
1 G1
2 H
3 H
4 N.C.
5 G2
C969
1000P
500V
3216
BRIGHTNESS
RV954
1M
R974
2.7M
R973
1M
R975
2.7M
R972
150K
JL961
R956
1M
C966
2.2
35V
C968
0.022
B
Q955(E-7)
H OUT
JL958
JL959
C965
82
10V
SXE
L953
HLC
CN953 2P (RED)
DH2
DH1
DY
L901
DEFLECTION
YOKE
CRT
M01KKD70WB
C955
0.022
B
R961
27
1/8W
C957
0.22
F
3216
R960
1.5K
R959
470K
C956
47
6.3V
TA
JL955
R983
1M
3
4.6
1.6
2.5
2.8
1.8
H.OSC
AFC
VIDEO AMP/MIX
4
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
4.9
2.1
2.1
2
1
2
R962
47K
1/10W (1%)
TH951
500
R964
100
R963
270K
C958
0.1
CHIP-FILM
R965
4.7
RV952
470
V SIZE
JL956
JL957
CN952 2P (WHT)
1 DV1
2 DV2

no mark : CAMERA POWER ON mode

VF-40 BOARD

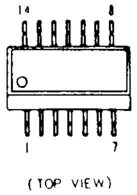


- **SIGNAL PATH**

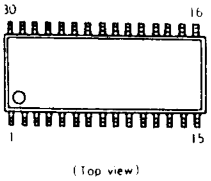
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA/DATA	
REC			➡≫	
PB			⇨≫	

4-3. SEMICONDUCTORS

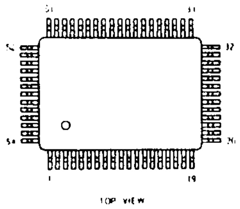
AN2512S


14
8
1
7
(TOP VIEW)

CXA1047M
CXA1127AM


30
16
1
15
(Top view)

CXA1200BQ
μPD7503GF-J57-3B8



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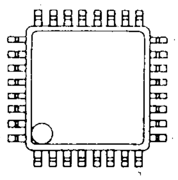

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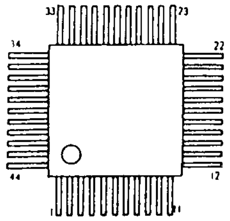
33
23
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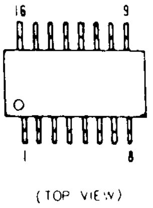
22
44
12
1

CXD1172AM
CXD1172M


16
9
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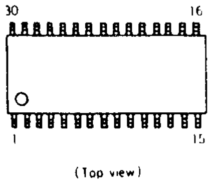
8
(TOP VIEW)

CXL1502M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16
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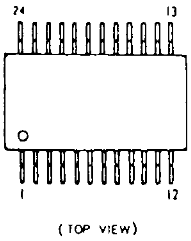
(Top view)

CXL1503N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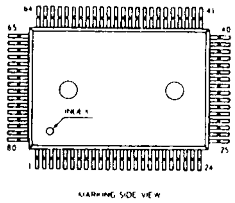
(TOP VIEW)

CXP80116-690Q


65
41
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80
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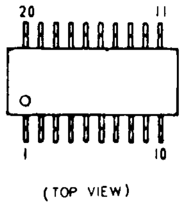
24
MARKING SIDE VIEW

MB88341PFV
MB88346PFV
MPC1737M
μPD6145G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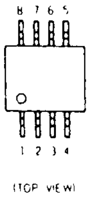
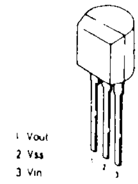
(TOP VIEW)

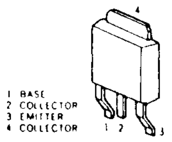
RC3414M
μPC1037GR


8 7 6 5
1 2 3 4
(TOP VIEW)

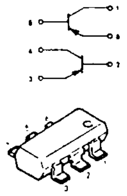
S-81350AG-REG


1 Vout
2 Vss
3 Vin
1 2 3

2SB1202FAS


4
1 BASE
2 COLLECTOR
3 EMITTER
4 COLLECTOR
1 2 3

IMT1US
FC101
XN4111
XN4113



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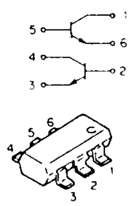
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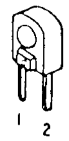
PT4850F



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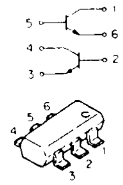
XN4501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IMZ1T108
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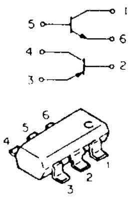
XN4312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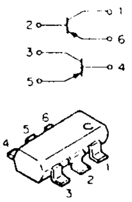
XN6401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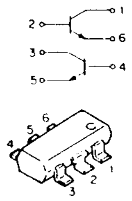
XN6215
XN6501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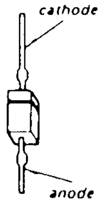
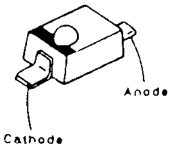
3

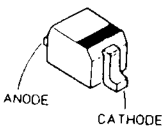
1SS283


cathode
anode

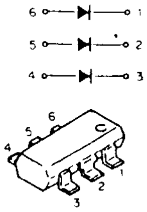
1T32
1T33C-01


Anode
Cathode

MA110
MA111
MA729


ANODE
CATHODE

MA121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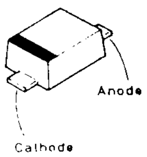
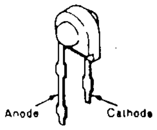
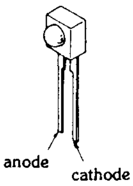
MA8082-M


Anode
Cathode

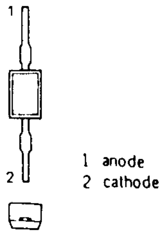
GL453


Anode
Cathode

TLR214


anode
cathode

TLS221

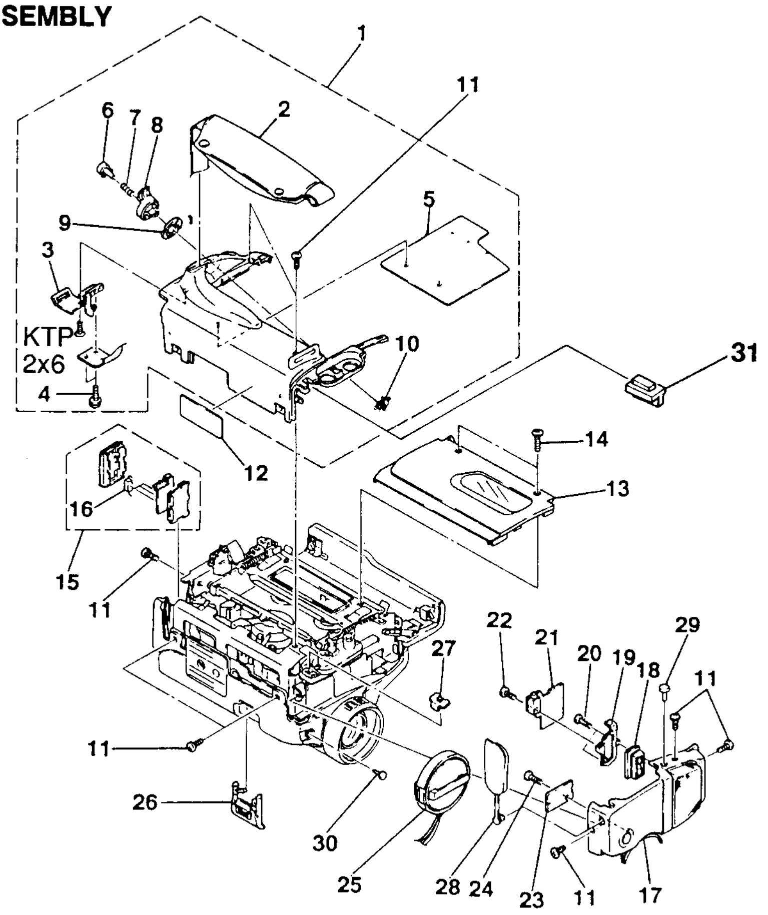

1
2
1 anode
2 cathode

SECTION 5
EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

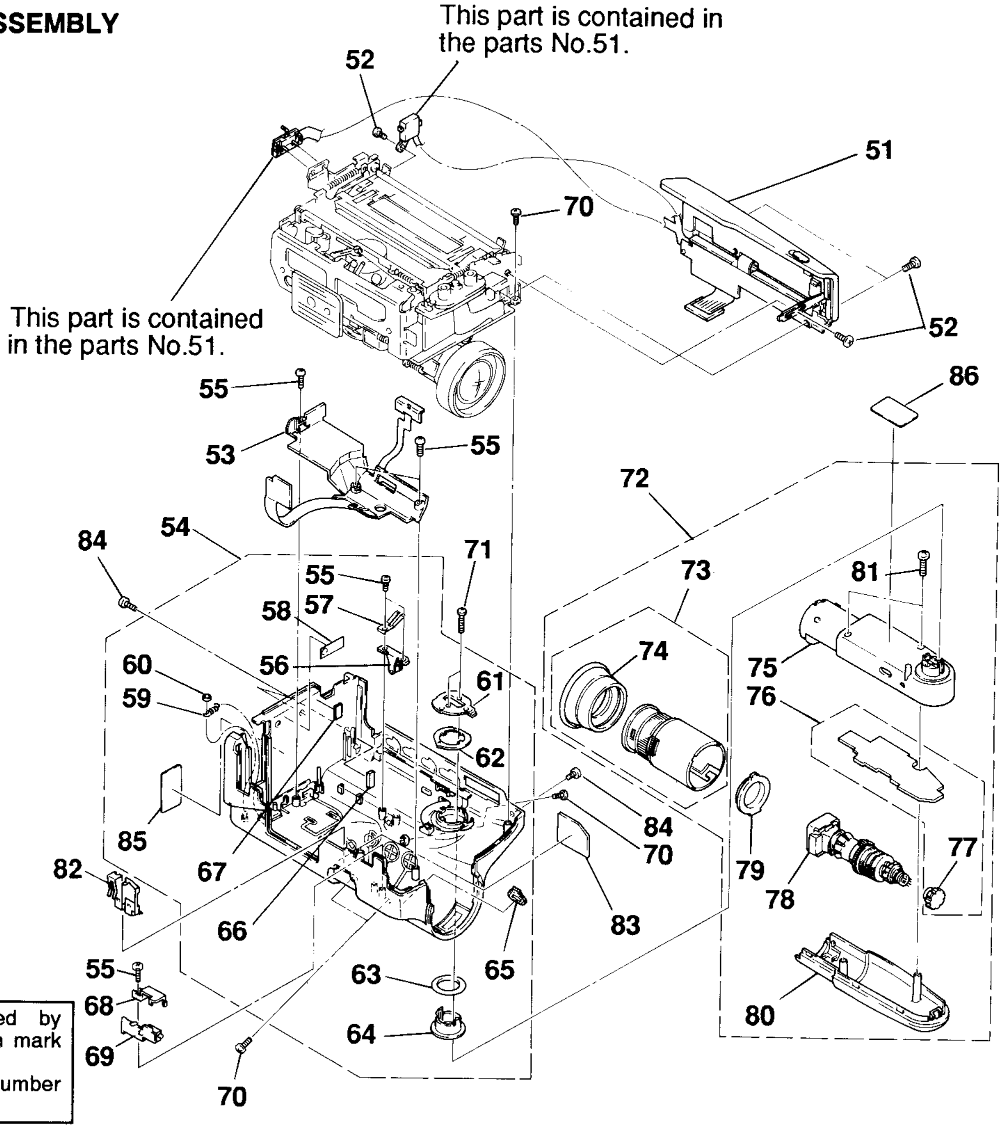
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

5-1. CABINET (L) ASSEMBLY



Ref.No.	Part No.	Description	Remark
1	A-7081-293-A	CABINET (L) BLOCK ASSY (E, Australian MODEL)	2-10, 25
1	A-7081-362-A	CABINET (L) BLOCK ASSY (AEP (BLACK), UK MODEL)	2-10, 25
1	A-7081-428-A	CABINET (L) BLOCK ASSY (AEP (WHITE) MODEL)	2-10, 25
2	3-736-807-01	BELT, GRIP (BLACK)	
2	3-736-807-61	BELT, GRIP (WHITE)	
3	3-747-709-01	BRACKET, BELT	
4	3-669-480-11	+ PTPWH 2	
5	3-747-708-01	COVER, DRUM	
6	3-736-343-01	BUTTON, S/S	
7	3-578-221-00	SPRING, COMPRESSION	
8	3-747-722-01	LEVER, STBY	
9	3-736-364-01	SPRING	
10	3-747-710-01	RING, RETAINING, STBY LEVER	
11	3-719-381-01	SCREW (M2X4) (BLACK)	
11	3-719-381-51	SCREW (M2x4) (WHITE)	
12	*3-749-002-01	LABEL, MODEL NUMBER (AEP) (AEP MODEL)	
12	*3-749-003-01	LABEL, MODEL NUMBER (UK) (UK, E, Australian MODEL)	
13	X-3749-161-1	LID ASSY, CASSETTE (BLACK)	
13	X-3940-027-1	LID ASSY, CASSETTE (WHITE)	
14	3-727-902-11	SCREW (M1.4), SPECIAL (BLACK)	
14	3-727-902-21	SCREW (M1.4), SPECIAL (WHITE)	
15	1-537-297-31	TERMINAL BOARD, BATTERY	16
16	⚠ 1-532-841-21	LINK, IC (1.6A)	
17	X-3749-041-1	PANEL ASSY, F (E, Australian MODEL)	
17	X-3749-162-1	PANEL ASSY, F (AEP (BLACK), UK MODEL)	
17	X-3940-026-1	PANEL ASSY, F (AEP (WHITE) MODEL)	
18	1-542-126-11	MICROPHONE UNIT	
19	3-747-724-01	PLATE, GROUND, MICROPHONE	
20	3-719-601-01	SCREW (B2X5), TAPPING	
21	*A-7071-260-A	MA-73 BOARD, COMPLETE	
22	3-713-786-51	SCREW (M2X3)	
23	*1-635-762-21	SW-161 BOARD	
24	3-719-601-11	SCREW (B2X5), TAPPING (BLACK)	
24	3-719-601-21	SCREW (B2x5), TAPPING (WHITE)	
25	A-7091-015-B	CAP ASSY, LENS	
26	3-747-174-11	LID, BATTERY CASE, LITHIUM (BLACK)	
26	3-747-174-41	LID, BATTERY CASE, LITHIUM (WHITE)	
27	3-747-735-01	KNOB, IN OUT (E, Australian MODEL)	
28	3-747-736-01	COVER, JACK (BLACK)	
28	3-747-736-11	COVER, JACK (WHITE)	
29	3-728-267-01	COVER, 3.5 JACK (MIC)	
30	3-728-266-01	COVER, 2.5 JACK (REMOTE)	
31	3-736-894-01	COVER, OUTPUT (AEP (BLACK), UK MODEL)	
31	3-736-894-21	COVER, OUTPUT (AEP (WHITE) MODEL)	

5-2. CABINET (R) ASSEMBLY



This part is contained in the parts No.51.

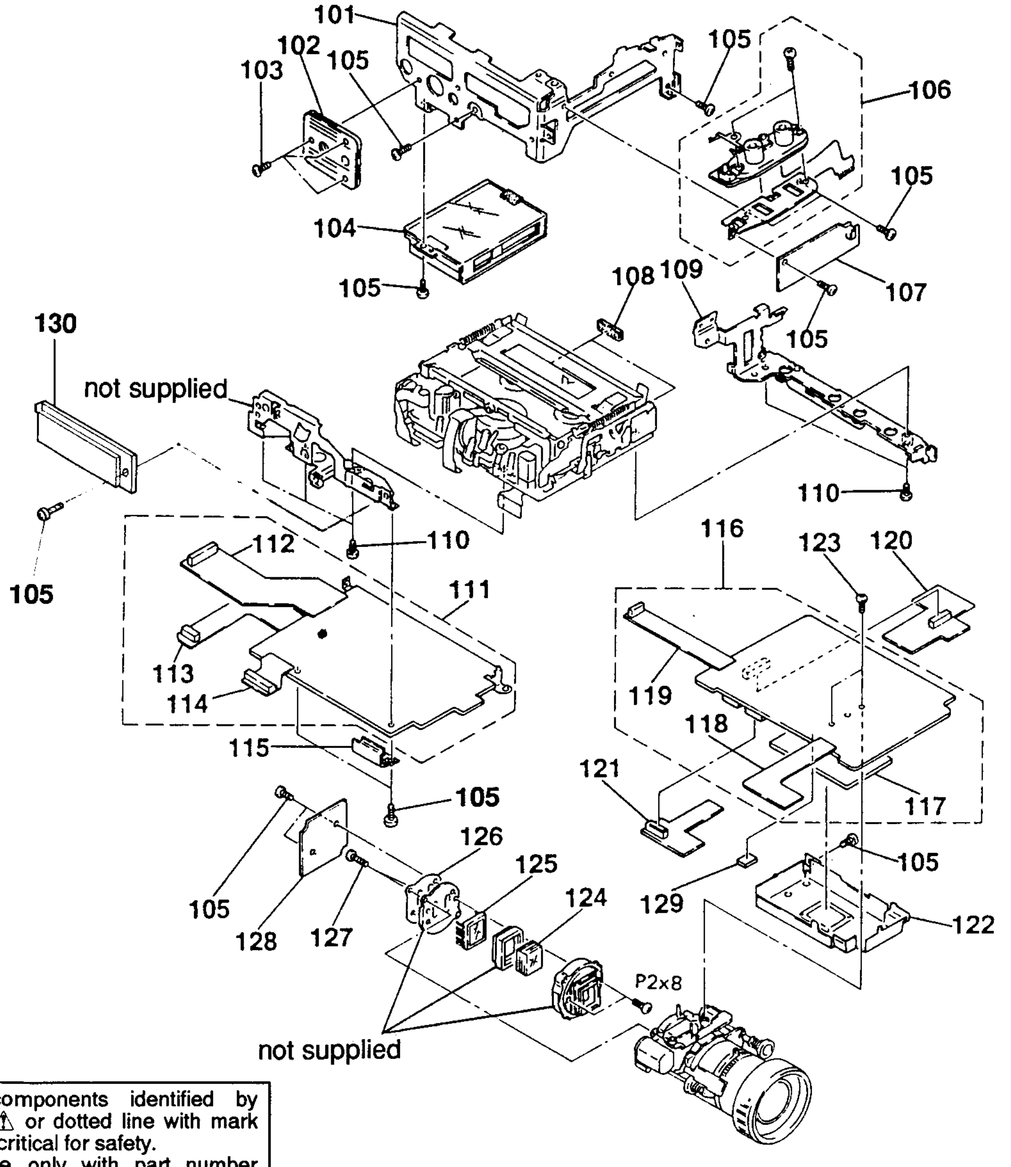
This part is contained in the parts No.51.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
51	1-466-382-21	SWITCH BLOCK, CONTROL (FK-0) (E, Australian MODEL)	
51	1-466-418-11	SWITCH BLOCK, CONTROL (FK-0) (AEP (BLACK), UK MODEL)	
51	1-466-418-71	SWITCH BLOCK, CONTROL (FK-0) (AEP (WHITE) MODEL)	
52	3-713-786-51	SCREW (M2X3)	
53	1-466-383-11	SWITCH BLOCK, CONTROL (CF-0)	
54	A-7081-427-A	CABINET (R) BLOCK ASSY (AEP (WHITE) MODEL)	55-67, 85
54	A-7081-455-A	CABINET (R) BLOCK ASSY (E, Australian MODEL)	55-67, 85
54	A-7081-361-A	CABINET (R) BLOCK ASSY (AEP (BLACK), UK MODEL)	55-67, 85
55	3-719-601-01	SCREW (B2X5), TAPPING	
56	X-3747-701-1	PIN ASSY, EVF LOCK	
57	3-747-713-01	PLATE, GROUND, EVF	
58	3-747-718-01	SHEET, GROUND	
59	3-674-402-00	SPRING, TENSION	
60	3-701-436-21	WASHER, POLYEHTHYLENE	
61	3-747-111-01	PLATE, LOCK, TILT	
62	3-747-110-01	SPRING, LEAF, TILT	
63	3-747-112-01	RING, TILT	
64	3-747-109-01	SLEEVE, EVF	
65	3-747-707-01	CUSHION	
66	3-749-531-01	SPACER	
67	*3-749-530-01	SHEET, PROTECTION, FLEXIBLE	
68	3-747-712-01	HOLDER, EL	
69	*A-7071-259-A	EL-11 BOARD, COMPLETE	
70	3-719-601-11	SCREW (B2X5), TAPPING (BLACK)	
70	3-719-601-21	SCREW (B2x5), TAPPING (WHITE)	
71	3-740-546-01	SCREW (M2X10)	
72	A-7019-276-A	EVF COMPLETE ASSY (WHITE)	73-81
72	*A-7019-262-A	EVF COMPLETE ASSY (BLACK)	73-81
73	A-7081-256-A	HOLDER BLOCK ASSY, FINDER (BLACK)	74
73	A-7081-377-A	HOLDER BLOCK ASSY, FINDER (WHITE)	74
74	3-736-370-01	EYE CUP	
75	X-3747-704-1	CABINET (L) ASSY, EVF (BLACK)	
75	X-3749-063-1	CABINET (L) ASSY, EVF (WHITE)	
76	*A-7062-393-A	VF-40 BOARD, COMPLETE	77
77	⚠ 1-540-019-21	SOCKET ASSY, CRT (W951)	
78	⚠ 1-452-565-11	CRT ASSY (MO1KKD70WB) (V901)	
79	3-747-116-01	COVER, CRT	
80	3-747-745-01	CABINET (R), EVF (BLACK)	
80	3-747-745-41	CABINET (R), EVF (WHITE)	
81	3-713-790-31	SCREW (M2X8), TAPPING, P3	
82	1-537-295-11	TERMINAL BOARD, LITHIUM	
83	3-747-157-01	SHEET (T), PROTECTION	
84	3-719-381-01	SCREW (M2X4) (BLACK)	
84	3-719-381-51	SCREW (M2x4) (WHITE)	
85	*3-719-683-01	LABEL, BATTERY FITTING	
86	*3-704-235-01	LABEL, CAUTION (UK MODEL)	

Be sure to read "Precations for Replacement of CCD Imager" on page 128 when changing the CCD imager.

5-3. MAIN BOARDS AND CAMERA ASSEMBLIES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111
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123
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121
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126
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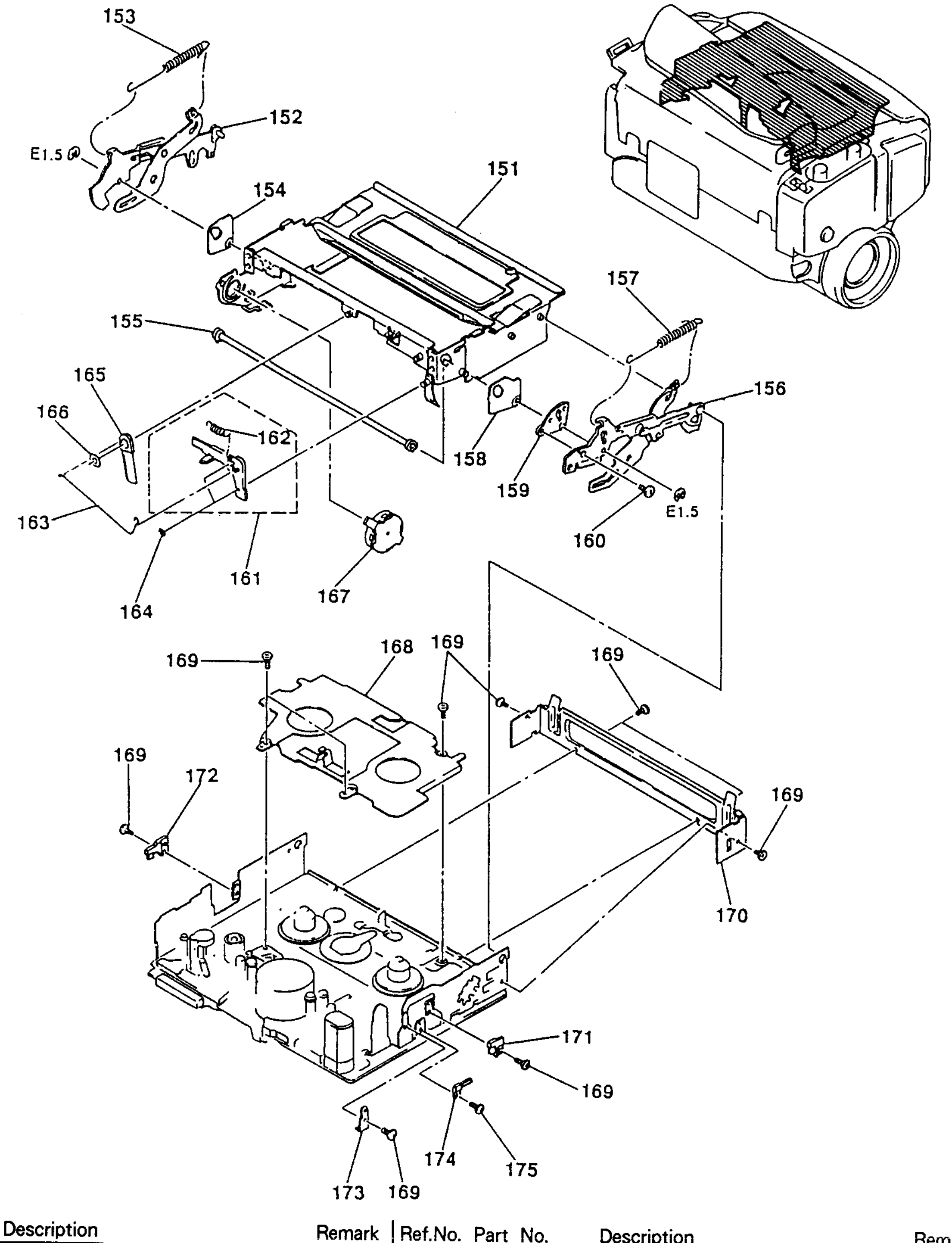
125
124
129
122
105
128
127
P2x8
not supplied

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Ref.No.	Part No.	Description	Remark
101	X-3747-706-1	FRAME ASSY, MD	
102	3-736-396-02	SCREW, TRIPOD (BLACK)	
102	3-736-396-31	SCREW, TRIPOD (WHITE)	
103	3-719-381-01	SCREW (M2X4) (BLACK)	
103	3-719-381-51	SCREW (M2x4) (WHITE)	
104	⚠ A-7062-288-A	DD-30 BOARD, COMPLETE (DC-DC CONVERTER UNIT)	
105	3-713-786-51	SCREW (M2X3)	
106	1-580-031-11	JACK ASSY, PIN	
107	*A-7062-388-A	AU-95 BOARD, COMPLETE	
108	*3-736-841-02	SPACER, FK	
109	X-3940-014-1	FRAME (UPPER) ASSY	
110	3-704-197-21	SCREW (M1.4X2.5), LOCKING	
111	*A-7062-389-A	VS-72 BOARD, COMPLETE (AEP, UK MODEL)	112-114
111	*A-7062-491-A	VS-72 BOARD, COMPLETE (E, Australian MODEL)	112-114
112	1-635-759-11	FP-330 FLEXIBLE BOARD	
113	1-630-592-11	FP-184 FLEXIBLE BOARD (W604)	
114	1-630-591-11	FP-182 FLEXIBLE BOARD	
115	3-736-323-01	SHIELD, RP CONNECTOR	
116	*A-7062-391-A	VC-84 BOARD, COMPLETE	117-119
117	A-7068-181-A	DT-77K BOARD, COMPLETE (HIC)	
118	1-635-396-11	FP-362 FLEXIBLE BOARD	
119	1-635-760-11	FP-331 FLEXIBLE BOARD	
120	*A-7062-392-A	TI-31 BOARD, COMPLETE	
121	*A-7062-390-A	LD-36 BOARD, COMPLETE	
122	*3-747-166-11	CASE (UPPER), SHIELD, VC	
123	3-719-601-01	SCREW (B2X5), TAPPING	
124	1-547-408-11	FILTER, INFRARED CUT (IR-03)	
125	8-752-604-51	IC ICX045AK-1 (CCD IMAGER)	
126	*3-749-945-01	SHEET, INSULATING, CCD	
127	3-747-151-11	SCREW (2X11)	
128	*1-635-755-21	CD-48 BOARD	
129	3-747-753-01	SPACER, ZOOM	
130	*A-7061-855-A	PD-18 BOARD, COMPLETE	

5-4. CASSETTE COMPARTMENT HOLDER ASSEMBLY


153
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E1.5
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E1.5
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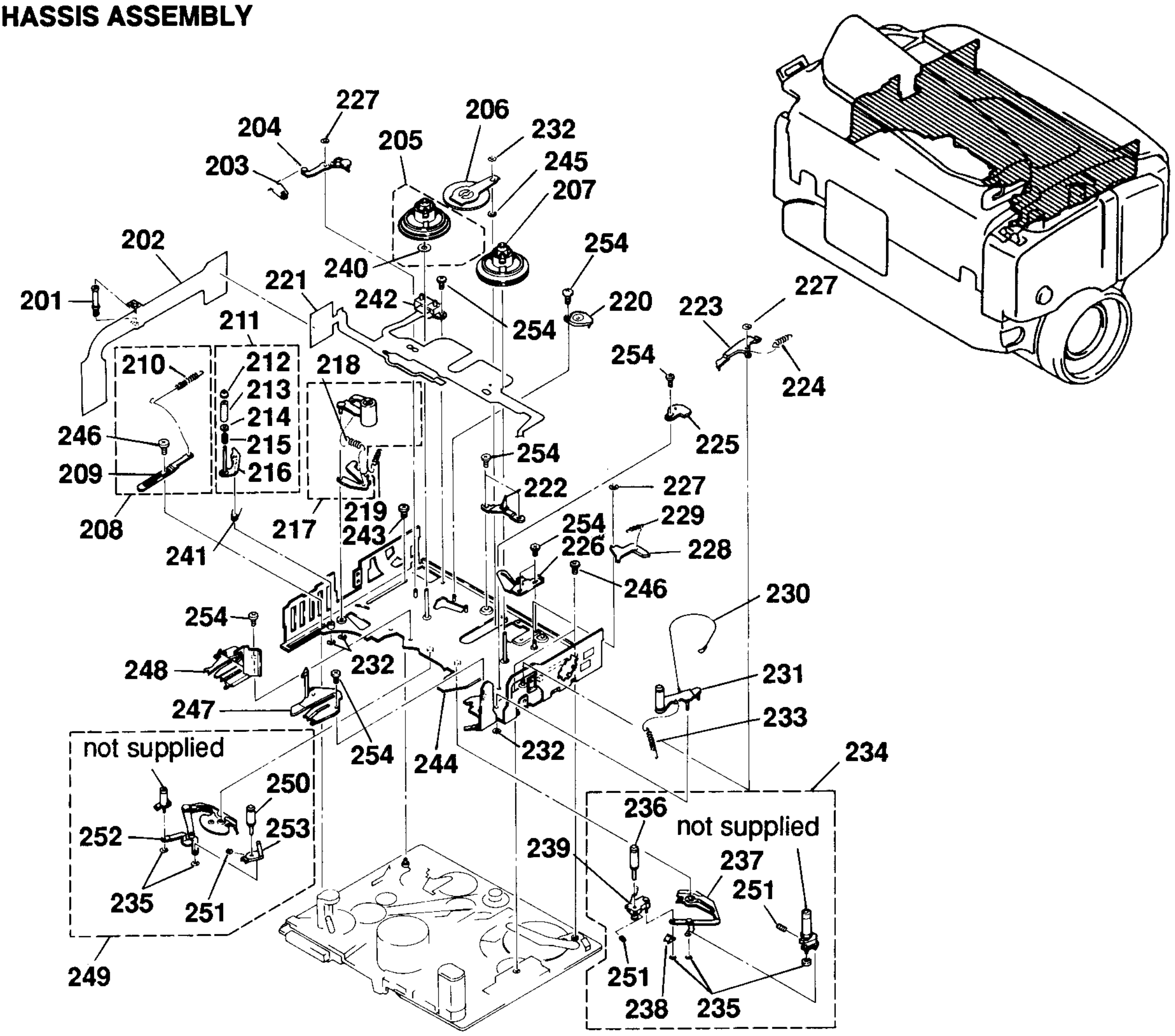
Ref.No.	Part No.	Description	Remark
151	X-3739-807-5	HOLDER ASSY (2)	
152	X-3739-814-1	ARM (TAKE-UP) ASSY (2), F	
153	3-739-872-01	SPRING, TENSION	
154	3-728-145-01	BEARING (T), MIDWAY GEAR	
155	X-3727-920-1	GEAR ASSY, MIDWAY	
156	X-3739-815-2	ARM (SUPPLY) ASSY (2), F	
157	3-739-873-01	SPRING, TENSION	
158	3-728-146-01	BEARING (S), MIDWAY GEAR	
159	3-739-808-01	PLATE (2), ADJUSTMENT, C ARM	
160	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD	
161	A-7040-164-A	ARM BLOCK ASSY, TP	162
162	3-667-309-00	SPRING, TENSION	
163	3-728-277-01	BAR, JOINT	
164	3-331-007-11	WASHER	
165	X-3727-922-2	PROTECTOR ASSY, T	
166	3-749-304-01	WASHER, STOPPER	
167	X-3739-809-1	DAMPER ASSY (2)	
168	3-728-227-01	BASE, LED	
169	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	
170	3-736-808-03	FRAME (2), LS	
171	3-727-957-01	HOLDER (S), SENSOR	
172	3-727-954-01	HOLDER (T), SENSOR	
173	3-727-946-01	SUPPORT, LS	
174	1-554-938-11	SWITCH, LEAF (S991)	
175	3-728-148-01	SCREW (M1.4X2.5), SPECIAL HEAD	

5-5. LS CHASSIS ASSEMBLY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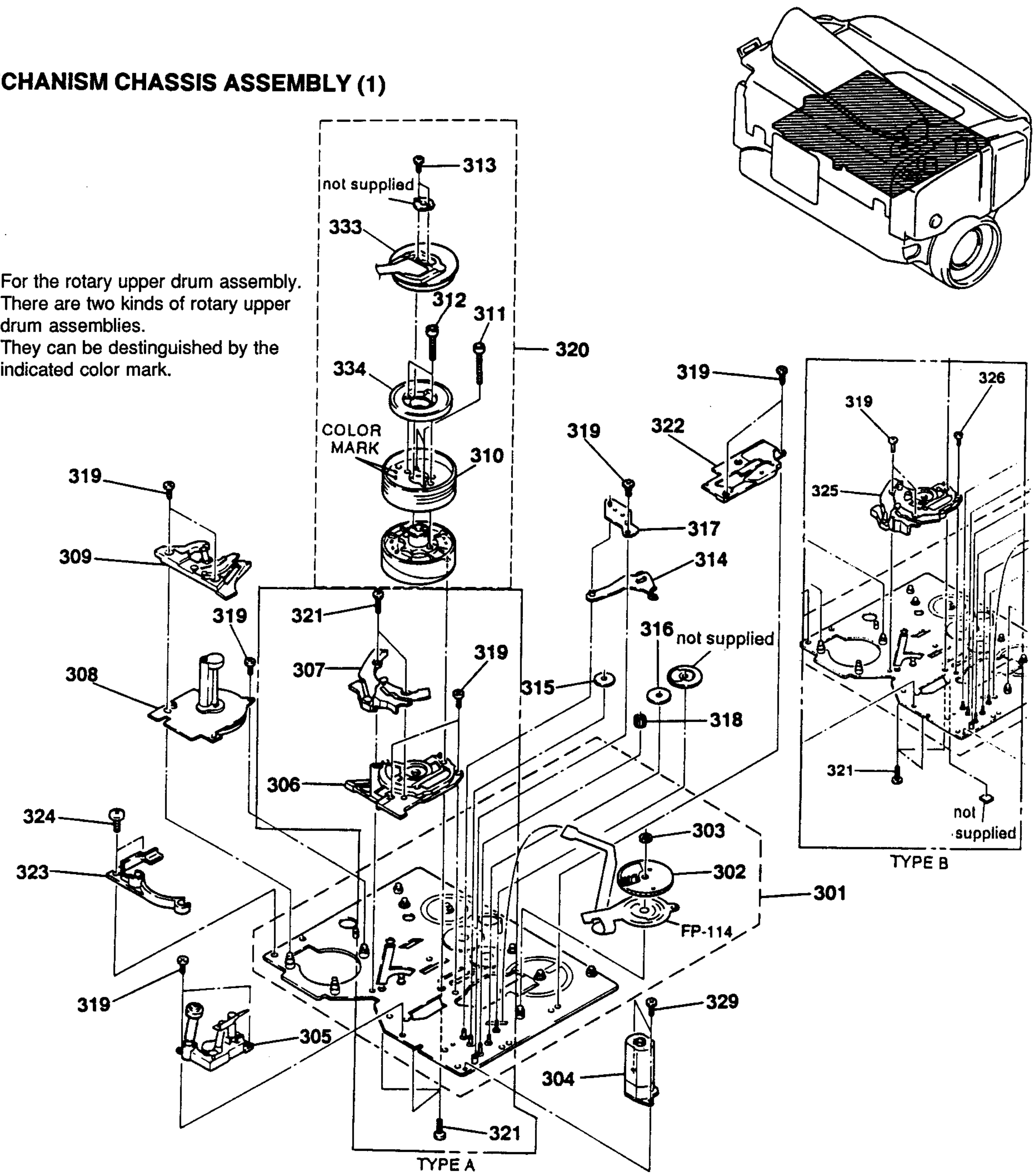
Ref.No.	Part No.	Description	Remark
201	3-739-807-01	SHAFT (2), FLEXIBLE ROTARY	
202	1-627-722-11	FP-149 FLEXIBLE BOARD	
203	3-732-068-01	SPRING (JD), RATCHET	
204	X-3728-005-1	RATCHET ASSY (JD), T	
205	X-3727-951-2	TABLE ASSY, REEL, TAKE-UP	240
206	X-3727-926-1	ARM ASSY, GEAR	
207	X-3727-952-1	TABLE ASSY, REEL, SUPPLY	
208	A-7040-150-A	SLIDER BLOCK ASSY, CAM	209, 210
209	3-728-089-01	SLIDER, CAM	
210	3-727-936-01	SPRING, TENSION	
211	A-7040-151-A	ARM BLOCK ASSY, TG11	212-216
212	3-728-131-02	FLANGE, UPPER, TG11	
213	3-728-133-02	SLEEVE, TG11	
214	3-728-069-02	FLANGE, LOWER, TG11	
215	3-732-040-01	SPRING, COMPRESSION	
216	X-3727-913-2	ARM ASSY, TG11	
217	A-7040-240-A	ARM BLOCK ASSY (JD), PINCH	218
218	3-727-927-01	SPRING (POWER TENSION),TENSION	
219	3-732-089-01	SPRING (JD), TENSION	
220	X-3727-914-4	CLUTCH ASSY, ONEWAY	
221	*A-7061-238-A	FP-115 FLEXIBLE BOARD, COMPLETE	242
222	X-3940-087-1	BASE ASSY, RL	
223	3-732-077-01	RATCHET (JD), S	
224	3-732-076-01	SPRING (JD), TENSION	
225	3-728-200-05	ADJUSTMENT BLOCK, TG1	
226	3-728-206-01	PLATE, CAM, LS	
227	3-728-091-01	WASHER, STOPPER	
228	3-732-079-01	ARM (JD), S SOFT	
229	3-732-078-01	SPRING (JD), TENSION	
230	X-3727-923-3	STRING ASSY	225
231	X-3749-001-1	ARM ASSY (JD), TG1	230
232	3-315-414-31	WASHER	
233	3-940-616-01	SPRING (JD), TENSION	
234	A-7040-211-B	ARM (S) BLOCK ASSY (2), GUIDE	235-239, 251
235	3-331-007-11	WASHER	
236	X-3727-935-2	ROLLER ASSY, TG5	
237	X-3727-941-1	ARM (S) ASSY, GUIDE	
238	3-728-062-01	SPRING (6GB), LEAF	
239	X-3727-948-1	BASE ASSY, TG6	
240	3-701-439-11	WASHER	
241	3-727-939-01	SPRING, TORSION	
242	1-571-647-11	SWITCH, PUSH (2 KEY) (S992)	
243	3-732-085-01	SCREW (1.2X1.6), SPECIAL HEAD	
244	X-3727-993-1	CHASSIS ASSY, LS	
245	3-321-394-01	WASHER	
246	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD	
247	3-728-226-01	RAIL (S) (JD), GUIDE	
248	3-728-244-01	RAIL (T), GUIDE	
249	A-7040-148-A	ARM (T) BLOCK ASSY, GUIDE	235, 250-253
250	X-3727-994-1	ROLLER ASSY, TG8	
251	3-728-290-01	SCREW (M1.2)	
252	X-3727-940-1	ARM (T) ASSY, GUIDE	
253	X-3727-947-1	BASE ASSY, TG7	
254	3-728-103-11	SCREW (M1.4X1.6), SPECIAL HEAD	

5-6. MECHANISM CHASSIS ASSEMBLY (1)

Note: For the rotary upper drum assembly. There are two kinds of rotary upper drum assemblies. They can be destinguished by the indicated color mark.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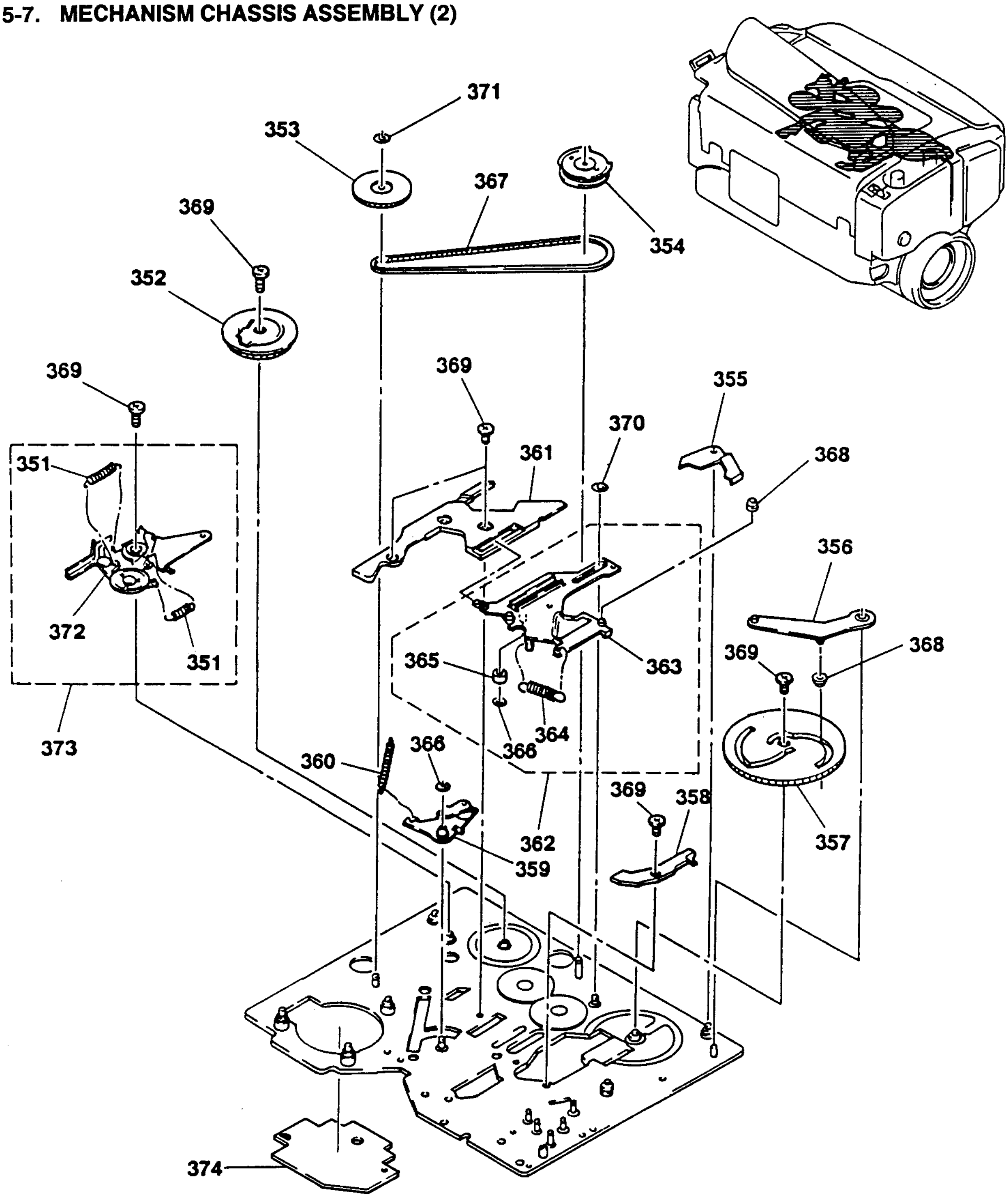
Ref.No.	Part No.	Description	Remark
301	A-7040-154-A	CHASSIS ASSY, MECHANICAL	302, 303, 331
302	X-3727-915-1	GEAR ASSY, MODE	
303	3-325-290-21	WASHER, STOPPER	
304	1-541-607-11	MOTOR, DC (LA12G-344VA) (LOADING) (M903)	
305	A-7040-209-A	BASE (1) BLOCK ASSY (2), RAIL	
306	X-3727-949-1	BASE ASSY, DRUM (TYPE A)	
307	A-7040-171-C	BASE (2) BLOCK ASSY, GUIDE RAIL (TYPE A)	
308	8-835-329-01	MOTOR, DC U-21A (CAPSTAN) (M902)	
309	X-3727-933-3	BASE (3) ASSY, GUIDE RAIL	
310	A-7049-197-A	DRUM ASSY, UPPER, ROTARY (DGR-37-R-(1)) MARKING; GREEN, BLACK, GREENISH-BROWN, BLACKISH-BROWN	
310	A-7049-198-A	DRUM ASSY, UPPER, ROTARY (DGR-37-R-(2)) MARKING; RED, BLUE, REDDISH-BROWN, BLUISH-BROWN	
311	3-727-809-01	SCREW (M1.4X5), HEXAGONAL HOLE	
312	3-727-807-01	SCREW (M1.7X3.3), HEXAGONAL HOLE	
313	3-728-108-21	SCREW (M1.4X2.7)	
314	X-3727-906-1	ARM ASSY	
315	X-3727-903-1	GEAR ASSY, NO.1	
316	X-3727-904-1	GEAR ASSY, NO.2	
317	3-728-119-01	RETAINER, GEAR	
318	3-728-149-01	GEAR, NO.0	
319	3-728-148-01	SCREW (M1.4X2.5), SPECIAL HEAD	
320	A-7048-214-A	DRUM BLOCK ASSY (DGH-37A-R) (M901)	310-313, 333, 334
321	3-728-108-01	SCREW (M1.4X4.5)	
322	3-728-231-01	BASE, TG-1 CAM	
323	3-732-064-01	COVER, ROTOR	
324	3-728-126-01	SCREW (M1.4X2), SPECIAL HEAD	
325	*A-7040-203-C	BASE (A) BLOCK ASSY, DRUM (TYPE B)	
326	3-703-816-51	SCREW (M1.4X3.5), SPECIAL HEAD (TYPE B)	
327	X-3728-009-2	SCREW ASSY, FITTING (TYPE B)	328
328	3-743-633-01	SPRING, COMPRESSION (TYPE B)	
329	3-732-087-31	SCREW (M1.4X1.8), SPECIAL HEAD	
330	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
331	*1-627-721-16	FP-114 FLEXIBLE BOARD	
332	3-732-084-01	SCREW (M1.4), SPECIAL HEAD	
333	A-7049-220-C	MOTOR ASSY (STATOR)	
334	A-7049-219-A	MOTOR ASSY (ROTOR)	

5-7. MECHANISM CHASSIS ASSEMBLY (2)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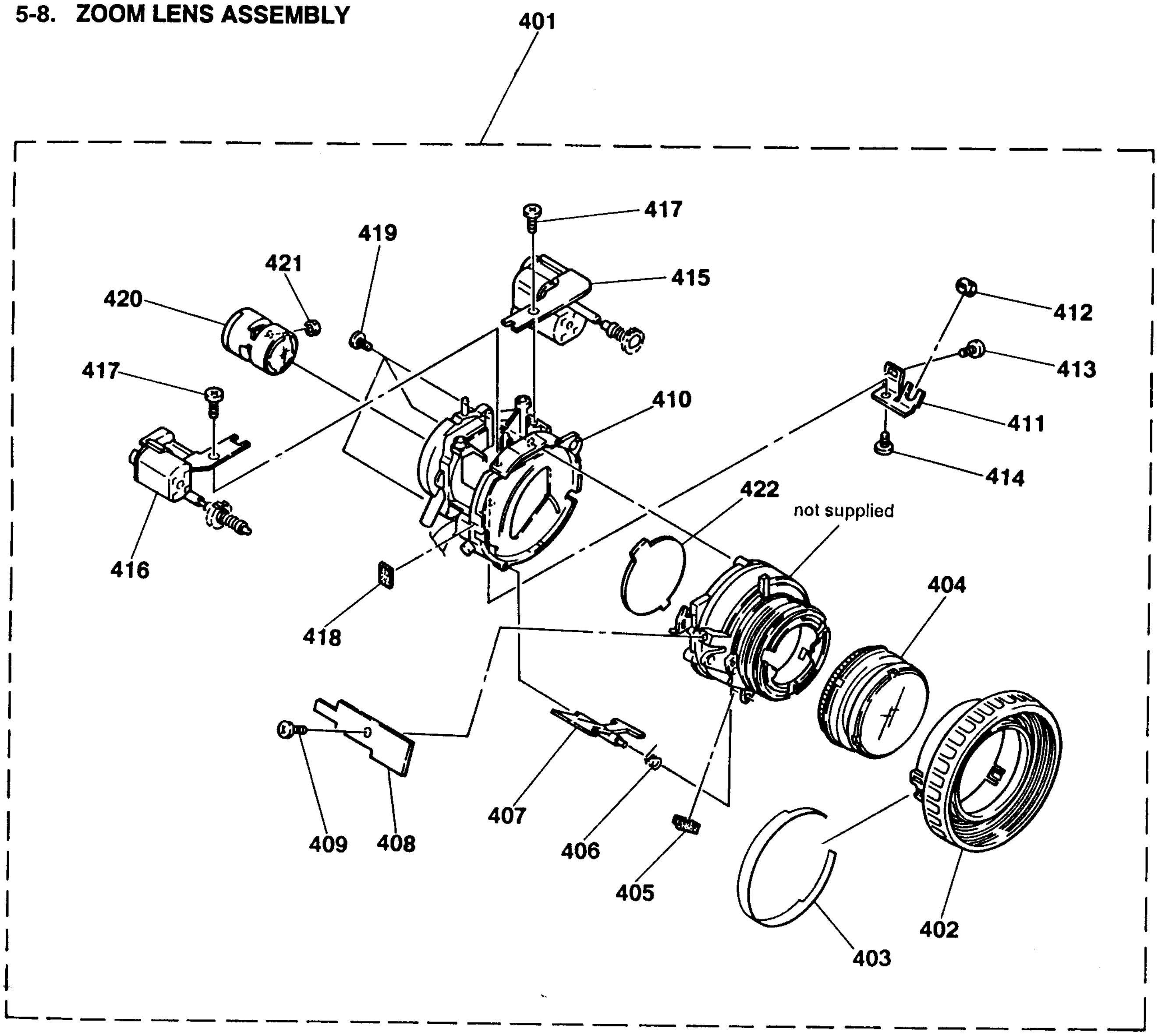
Ref.No.	Part No.	Description	Remark
351	3-728-065-01	SPRING, TENSION	
352	3-728-190-01	CAM (B)	
353	X-3727-930-1	GEAR ASSY, CONVERSION	
354	X-3727-931-1	PULLEY ASSY, MIDWAY	
355	3-728-154-01	ARM, EJ	
356	X-3727-916-1	ARM ASSY, LS	
357	3-728-208-02	CAM (A)	
358	3-728-213-01	SUPPORT (S), GL	
359	X-3727-924-2	ARM ASSY, GUIDE LOCK	
360	3-728-015-01	SPRING (POWER TENSION), TENSION	
361	3-728-228-03	SUPPORT (T), GL	
362	A-7040-153-A	SLIDER BLOCK ASSY, GL	363-366

Ref.No.	Part No.	Description	Remark
363	X-3727-942-1	SLIDER ASSY, GL	
364	3-727-929-01	SPRING (POWER TENSION), TENSION	
365	3-728-144-01	ROLLER, GL	
366	3-331-007-11	WASHER	
367	3-728-212-01	BELT, RELAY	
368	3-728-109-01	ROLLER, LS	
369	3-728-148-11	SCREW (M1.4X2.5), SPECIAL HEAD	
370	3-315-384-31	WASHER, STOPPER	
371	3-728-091-01	WASHER, STOPPER	
372	X-3727-944-1	ARM ASSY, PINCH PRESS	
373	A-7040-152-A	ARM BLOCK ASSY, PINCH PRESS	351, 372
374	3-743-631-01	COVER	

5-8. ZOOM LENS ASSEMBLY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Ref.No.	Part No.	Description	Remark
401	1-547-427-11	LENS, ZOOM (VCL-706WB)	402-422
402	3-708-038-01	RING (F)	
403	3-708-039-01	SHEET (F)	
404	3-708-040-01	LENS ASSY, F	
405	3-708-042-01	RUBBER, STOPPER	
406	3-708-045-01	SPRING, MACRO	
407	3-708-046-01	BUTTON, MACRO	
408	3-708-041-01	SENSOR ASSY, F	
409	3-708-044-01	SCREW, FITTING, (F) SENSOR	
410	3-708-047-01	MIRROR TUBE ASSY, REAR	
411	3-708-052-01	RETAINER, ECCENTRIC PIN	
412	3-708-051-01	PIN, ECCENTRIC	
413	3-708-054-01	SCREW, FB LOCK	
414	3-708-053-01	SCREW, FB FITTING	
415	3-708-056-01	MOTOR ASSY, F (M905)	
416	3-708-055-01	MOTOR ASSY, PZ (M906)	
417	3-708-057-01	SCREW, MOTOR FITTING	
418	3-708-043-01	RUBBER, VIBRATION PROOF	
419	3-708-049-01	SCREW, DOCKING	
420	3-708-048-01	LENS ASSY, RELAY	
421	3-708-050-01	NUT, FB	
422	1-547-442-11	FILTER, OPTICAL (PN-03-01)	

SECTION 6
ELECTRICAL PARTS LIST

FP-115 **PD-18**

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- SEMICONDUCTORS
  In each case, U: μ , for example:
  UA...:μA..., UPA...:μPA..., UPB...:μPB..., UPC...: μPC..., UPD...: μPD...
- CAPACITORS
  MF : μF, PF : μμF
- COILS
  MMH : mH, UH : μH

Ref.No.	Part No.	Description	Remark
	*A-7061-238-A	FP-115 BOARD, COMPLETE (Ref.No.8,000 ********************** series)	
	3-727-954-01	HOLDER (T), SENSOR	
	3-727-957-01	HOLDER (S), SENSOR	
	3-732-046-01	HOLDER, LED	

DIODE

Ref.No.	Part No.	Description	Remark
D991	8-719-951-03	DIODE GL453	

ELEMENT HALL

Ref.No.	Part No.	Description	Remark
H991	1-808-448-11	ELEMENT, HALL (CHIP TYPE)	
H992	1-808-448-11	ELEMENT, HALL (CHIP TYPE)	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q991	8-729-907-25	TRANSISTOR PT4850F (TAPE TOP)	
Q992	8-729-907-25	TRANSISTOR PT4850F (TAPE END)	

RESISTOR

Ref.No.	Part No.	Description	Remark
R991	1-216-817-11	METAL GLAZE 470 5% 1/6W	
R992	1-216-817-11	METAL GLAZE 470 5% 1/6W	
R993	1-216-817-11	METAL GLAZE 470 5% 1/6W	
R994	1-216-817-11	METAL GLAZE 470 5% 1/6W	

SWITCH

Ref.No.	Part No.	Description	Remark
S991	1-554-938-11	SWITCH, LEAF (CASSETTE LOCK)	
S992	1-571-647-11	SWITCH, PUSH (2 KEY) (REC PROOF, ME/MP)	

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Ref.No.	Part No.	Description	Remark
	*A-7061-855-A	PD-18 BOARD, COMPLETE (Ref.No.4,000 ********************* series)	

CAPACITOR

Ref.No.	Part No.	Description	Remark
C201	1-163-086-00	CERAMIC CHIP 3PF 0.25PF 50V	
C202	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C203	1-163-033-00	CERAMIC CHIP 0.022MF 50V	
C204	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C205	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C206	1-163-131-00	CERAMIC CHIP 390PF 5% 50V	
C207	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C208	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C209	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
C210	1-164-182-11	CERAMIC CHIP 0.0033MF 10% 50V	
C211	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C212	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C213	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C214	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	

DIODE

Ref.No.	Part No.	Description	Remark
D201	8-719-800-76	DIODE 1SS226	

FILTER

Ref.No.	Part No.	Description	Remark
FL201	1-236-188-11	FILTER, BAND PASS	
FL202	1-415-664-11	DELAY LINE, ULTRASONIC 2H	

COIL

Ref.No.	Part No.	Description	Remark
L201	1-410-383-31	INDUCTOR CHIP 15UH	
L202	1-410-385-11	INDUCTOR CHIP 22UH	
L203	1-412-029-11	INDUCTOR CHIP 10UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q201	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q202	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q203	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q204	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q205	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q206	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q207	8-729-100-66	TRANSISTOR 2SC1623-L6	
Q208	8-729-100-66	TRANSISTOR 2SC1623-L6	

RESISTOR

Ref.No.	Part No.	Description	Remark
R201	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R202	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R203	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R204	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R205	1-216-033-00	METAL GLAZE 220 5% 1/10W	
R206	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R207	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R208	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R209	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R210	1-216-039-00	METAL GLAZE 390 5% 1/10W	
R211	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R212	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
R213	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R214	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R215	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R216	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R217	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R218	1-216-043-00	METAL GLAZE 560 5% 1/10W	
R219	1-216-027-00	METAL GLAZE 120 5% 1/10W	
R220	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	

Ref.No.	Part No.	Description	Remark
R221	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R222	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R223	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R224	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R225	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R226	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R227	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R228	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R229	1-216-079-00	METAL GLAZE 18K 5% 1/10W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV201	1-238-089-11	RES, ADJ, CERMET 4.7K	

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*A-7062-388-A AU-95 BOARD, COMPLETE (Ref.No.6,000
********************* series)

CAPACITOR

Ref.No.	Part No.	Description	Remark
C421	1-126-206-11	ELECT CHIP 100MF 20% 6.3V	
C422	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C423	1-135-177-21	TANTAL. CHIP 1MF 20% 20V	
C424	1-135-177-21	TANTAL. CHIP 1MF 20% 20V	
C425	1-162-969-11	CERAMIC CHIP 0.0068MF 10% 25V	
C426	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C428	1-135-180-21	TANTAL. CHIP 3.3MF 20% 6.3V	
C429	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C430	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C431	1-126-199-11	ELECT CHIP 6.8MF 20% 35V	
C432	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C433	1-126-206-11	ELECT CHIP 100MF 20% 6.3V	
C434	1-135-177-21	TANTAL. CHIP 1MF 20% 20V	
C437	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C438	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C439	1-135-149-21	TANTAL. CHIP 2.2MF 20% 10V	
C440	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C441	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C442	1-164-227-11	CERAMIC CHIP 0.022MF 10% 25V	
C443	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C444	1-135-145-11	TANTAL. CHIP 0.47MF 20% 35V	
C445	1-162-965-11	CERAMIC CHIP 0.0015MF 10% 50V	
C446	1-163-016-00	CERAMIC CHIP 0.0039MF 10% 50V	
C447	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C448	1-162-966-11	CERAMIC CHIP 0.0022MF 10% 50V	
C449	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C450	1-162-910-11	CERAMIC CHIP 5PF 0.25PF 50V	
C451	1-163-133-00	CERAMIC CHIP 470PF 5% 50V	
C452	1-162-910-11	CERAMIC CHIP 5PF 0.25PF 50V	
C453	1-162-968-11	CERAMIC CHIP 0.0047MF 10% 50V	
C454	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C455	1-162-587-11	CERAMIC CHIP 0.039MF 10% 25V	
C456	1-162-963-11	CERAMIC CHIP 680PF 10% 50V	
C457	1-163-020-00	CERAMIC CHIP 0.0082MF 10% 50V	
C458	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C459	1-135-177-21	TANTAL. CHIP 1MF 20% 20V	
C460	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C461	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C462	1-135-149-21	TANTAL. CHIP 2.2MF 20% 10V	
C463	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C464	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C465	1-162-955-11	CERAMIC CHIP 150PF 5% 50V	
C466	1-162-966-11	CERAMIC CHIP 0.0022MF 10% 50V	
C467	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C469	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C470	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C471	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	

CONNECTOR

Ref.No.	Part No.	Description	Remark
CN401	1-568-365-41	CONNECTOR, BOARD TO BOARD 14P	
CN402	*1-566-758-11	PIN, CONNECTOR (PC BOARD) 3P	

DIODE

Ref.No.	Part No.	Description	Remark
D402	8-719-420-15	DIODE MA8082-M(TX)	

FILTER

Ref.No.	Part No.	Description	Remark
FL401	1-236-145-11	FILTER, BAND PASS	

IC

Ref.No.	Part No.	Description	Remark
IC401	8-752-033-01	IC CXA1237AR	

COIL

Ref.No.	Part No.	Description	Remark
L401	1-412-032-11	INDUCTOR CHIP 100UH	
L402	1-410-658-31	INDUCTOR CHIP 220UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q406	8-729-117-32	TRANSISTOR 2SC4177	
Q409	8-729-117-32	TRANSISTOR 2SC4177	
Q410	8-729-117-32	TRANSISTOR 2SC4177	
Q411	8-729-905-15	TRANSISTOR DTC144WU	
Q412	8-729-905-09	TRANSISTOR DTA144WU	
Q413	8-729-117-32	TRANSISTOR 2SC4177	
Q414	8-729-905-09	TRANSISTOR DTA144WU	
Q415	8-729-821-88	TRANSISTOR 2SK1332-3	
Q416	8-729-117-32	TRANSISTOR 2SC4177	
Q417	8-729-602-36	TRANSISTOR 2SA1602	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
Q418	8-729-602-36	TRANSISTOR 2SA1602	
Q419	8-729-117-32	TRANSISTOR 2SC4177	

RESISTOR

Ref.No.	Part No.	Description	Remark
R421	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R422	1-216-826-11	METAL GLAZE 2.7K 5% 1/16W	
R423	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R424	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R425	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R426	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R430	1-216-849-11	METAL GLAZE 220K 5% 1/16W	
R431	1-216-853-11	METAL GLAZE 470K 5% 1/16W	
R432	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R433	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R434	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R435	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R436	1-216-838-11	METAL GLAZE 27K 5% 1/16W	
R437	1-216-835-11	METAL GLAZE 15K 5% 1/16W	
R438	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R439	1-216-826-11	METAL GLAZE 2.7K 5% 1/16W	
R440	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R441	1-216-831-11	METAL GLAZE 6.8K 5% 1/16W	
R444	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R445	1-216-851-11	METAL GLAZE 330K 5% 1/16W	
R446	1-216-843-11	METAL GLAZE 68K 5% 1/16W	
R447	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R448	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R449	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R450	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R451	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R452	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R453	1-216-649-11	METAL CHIP 820 0.50% 1/10W	
R454	1-216-649-11	METAL CHIP 820 0.50% 1/10W	
R455	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R456	1-216-834-11	METAL GLAZE 12K 5% 1/16W	
R457	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R458	1-216-819-11	METAL GLAZE 680 5% 1/16W	
R459	1-216-826-11	METAL GLAZE 2.7K 5% 1/16W	
R460	1-216-826-11	METAL GLAZE 2.7K 5% 1/16W	
R461	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R462	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R463	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R464	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R465	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R466	1-216-835-11	METAL GLAZE 15K 5% 1/16W	
R467	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R468	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R469	1-216-820-11	METAL GLAZE 820 5% 1/16W	
R470	1-216-814-11	METAL GLAZE 270 5% 1/16W	
R471	1-216-810-11	METAL GLAZE 120 5% 1/16W	
R472	1-216-822-11	METAL GLAZE 1.2K 5% 1/16W	
R473	1-216-045-00	METAL GLAZE 680 5% 1/10W	
R474	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R475	1-216-817-11	METAL GLAZE 470 5% 1/16W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV401	1-238-090-11	RES, ADJ, CERMET 10K	
RV402	1-238-091-11	RES, ADJ, CERMET 22K	

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Ref.No.	Part No.	Description	Remark
	*A-7062-389-A	VS-72 BOARD, COMPLETE (AEP, UK MODEL) ********************* (Ref.No. 5,000 series)	
	*A-7062-491-A	VS-72 BOARD, COMPLETE (E, Australian MODEL) ********************* (Ref.No. 5,000 series)	
	1-630-591-11	PC BOARD, FP-182 FLEXIBLE	
	*3-736-316-01	CASE (UPPER), RP SHIELD	
	*3-736-317-01	CASE (LOWER), RP SHIELD	
	*3-736-322-01	CASE, FE SHIELD	
	*3-736-887-01	PLATE, SHIELD, PAL DELAY LINE	
	3-747-748-01	PLATE (L), GROUND	
	3-747-749-01	PLATE (R), GROUND	

CAPACITOR

Ref.No.	Part No.	Description	Remark
C101	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C102	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C104	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C105	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C106	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C107	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C108	1-135-161-21	TANTAL. CHIP 22MF 20% 10V	
C109	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C110	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C111	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C112	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C113	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C114	1-135-180-21	TANTAL. CHIP 3.3MF 20% 6.3V	
C115	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C116	1-135-180-21	TANTAL. CHIP 3.3MF 20% 6.3V	
C117	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C118	1-162-968-11	CERAMIC CHIP 0.0047MF 10% 50V	
C119	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C120	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C121	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C123	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C124	1-162-968-11	CERAMIC CHIP 0.0047MF 10% 50V	
C125	1-164-004-11	CERAMIC CHIP 0.1MF 10% 25V	
C126	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C127	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark
C128	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C129	1-162-945-11	CERAMIC CHIP 22PF	5% 50V
C130	1-162-945-11	CERAMIC CHIP 22PF	5% 50V
C131	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C132	1-135-161-21	TANTAL. CHIP 22MF	20% 10V
C133	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C134	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C135	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C136	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C137	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C138	1-135-180-21	TANTAL. CHIP 3.3MF	20% 6.3V
C139	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C140	1-135-180-21	TANTAL. CHIP 3.3MF	20% 6.3V
C141	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C142	1-162-968-11	CERAMIC CHIP 0.0047MF	10% 50V
C143	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C144	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C145	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C146	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C147	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C148	1-162-968-11	CERAMIC CHIP 0.0047MF	10% 50V
C149	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C150	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C151	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C152	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C161	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C162	1-164-004-11	CERAMIC CHIP 0.1MF	10% 25V
C163	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C164	1-135-161-21	TANTAL. CHIP 22MF	20% 10V
C165	1-162-948-11	CERAMIC CHIP 39PF	5% 50V
C166	1-162-963-11	CERAMIC CHIP 680PF	10% 50V
C167	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C168	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C169	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C170	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C171	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C172	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C173	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C174	1-135-177-21	TANTAL. CHIP 1MF	20% 20V
C175	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C176	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C177	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C178	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C179	1-135-177-21	TANTAL. CHIP 1MF	20% 20V
C180	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C181	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C182	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C183	1-135-161-21	TANTAL. CHIP 22MF	20% 10V
C184	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C185	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C186	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C192	1-163-038-00	CERAMIC CHIP 0.1MF	25V
C193	1-162-953-11	CERAMIC CHIP 100PF	5% 50V
C194	1-162-927-11	CERAMIC CHIP 100PF	5% 50V
C195	1-162-927-11	CERAMIC CHIP 100PF	5% 50V
C196	1-164-217-11	CERAMIC CHIP 150PF	0.25PF 50V
C197	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
C201	1-135-145-11	TANTAL. CHIP 0.47MF	20% 35V
C203	1-126-205-11	ELECT CHIP 47MF	20% 6.3V
C204	1-124-779-00	ELECT CHIP 10MF	20% 16V
C205	1-164-156-11	CERAMIC CHIP 0.1MF	25V
C206	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C207	1-126-246-11	ELECT CHIP 220MF	20% 4V
C208	1-162-974-11	CERAMIC CHIP 0.01MF	50V
C209	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C210	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C211	1-135-149-21	TANTAL. CHIP 2.2MF	20% 10V
C212	1-135-146-21	TANTAL. CHIP 0.68MF	20% 25V
C213	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C214	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C215	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C216	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C217	1-135-145-11	TANTAL. CHIP 0.47MF	20% 35V
C218	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C219	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C220	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C221	1-162-964-11	CERAMIC CHIP 0.001MF	10% 50V
C222	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C223	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C224	1-162-638-11	CERAMIC CHIP 1MF	16V
C227	1-162-638-11	CERAMIC CHIP 1MF	16V
C229	1-162-638-11	CERAMIC CHIP 1MF	16V
C230	1-162-638-11	CERAMIC CHIP 1MF	16V
C232	1-162-638-11	CERAMIC CHIP 1MF	16V
C233	1-135-180-21	TANTAL. CHIP 3.3MF	20% 6.3V
C234	1-162-970-11	CERAMIC CHIP 0.01MF	10% 25V
C235	1-162-638-11	CERAMIC CHIP 1MF	16V
C236	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C237	1-162-638-11	CERAMIC CHIP 1MF	16V
C238	1-162-638-11	CERAMIC CHIP 1MF	16V
C239	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C240	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C241	1-164-156-11	CERAMIC CHIP 0.1MF	25V
C242	1-135-180-21	TANTAL. CHIP 3.3MF	20% 6.3V
C243	1-135-157-21	TANTAL. CHIP 10MF	20% 6.3V
C244	1-162-638-11	CERAMIC CHIP 1MF	16V
C245	1-162-974-11	CERAMIC CHIP 0.01MF	50V
C246	1-135-180-21	TANTAL. CHIP 3.3MF	20% 6.3V
C247	1-164-156-11	CERAMIC CHIP 0.1MF	25V
C248	1-135-070-00	TANTAL. CHIP 0.1MF	20% 35V
C249	1-162-638-11	CERAMIC CHIP 1MF	16V
C250	1-162-951-11	CERAMIC CHIP 68PF	5% 50V

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Ref.No.	Part No.	Description			Remark
C251	1-162-953-11	CERAMIC CHIP 100PF	5%	50V	
C252	1-162-937-11	CERAMIC CHIP 6PF	0.5PF	50V	
C253	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C254	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C256	1-162-953-11	CERAMIC CHIP 100PF	5%	50V	
C257	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C258	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C259	1-162-945-11	CERAMIC CHIP 22PF	5%	50V	
C260	1-162-954-11	CERAMIC CHIP 120PF	5%	50V	
C261	1-162-944-11	CERAMIC CHIP 18PF	5%	50V	
C262	1-162-962-11	CERAMIC CHIP 470PF	10%	50V	
C263	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V	
C264	1-162-953-11	CERAMIC CHIP 100PF	5%	50V	
C265	1-162-942-11	CERAMIC CHIP 12PF	5%	50V	
C266	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C267	1-163-133-00	CERAMIC CHIP 470PF	5%	50V	
C268	1-163-131-00	CERAMIC CHIP 390PF	5%	50V	
C269	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C270	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C271	1-162-958-11	CERAMIC CHIP 270PF	5%	50V	
C272	1-162-945-11	CERAMIC CHIP 22PF	5%	50V	
C273	1-162-950-11	CERAMIC CHIP 56PF	5%	50V	
C274	1-162-958-11	CERAMIC CHIP 270PF	5%	50V	
C275	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C276	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C277	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C278	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C279	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V	
C280	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C281	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C282	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C283	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C284	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C285	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C287	1-162-951-11	CERAMIC CHIP 68PF	5%	50V	
C288	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C289	1-135-161-21	TANTAL. CHIP 22MF	20%	10V	
C290	1-162-957-11	CERAMIC CHIP 220PF	5%	50V	
C291	1-162-638-11	CERAMIC CHIP 1MF		16V	
C293	1-135-161-21	TANTAL. CHIP 22MF	20%	10V	
C294	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V	
C295	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C296	1-162-947-11	CERAMIC CHIP 33PF	5%	50V	
C297	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C298	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C299	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C301	1-162-946-11	CERAMIC CHIP 27PF	5%	50V	
C302	1-126-205-11	ELECT CHIP 47MF	20%	6.3V	
C303	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C304	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C305	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C306	1-163-986-00	CERAMIC CHIP 0.027MF	10%	25V	
C307	1-162-952-11	CERAMIC CHIP 82PF	5%	50V	
C308	1-162-966-11	CERAMIC CHIP 0.0022MF	10%	50V	
C309	1-162-947-11	CERAMIC CHIP 33PF	5%	50V	
C310	1-162-949-11	CERAMIC CHIP 47PF	5%	50V	
C312	1-162-949-11	CERAMIC CHIP 47PF	5%	50V	
C313	1-162-962-11	CERAMIC CHIP 470PF	10%	50V	
C314	1-135-161-21	TANTAL. CHIP 22MF	20%	10V	
C315	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C316	1-162-948-11	CERAMIC CHIP 39PF	5%	50V	
C317	1-162-943-11	CERAMIC CHIP 15PF	5%	50V	
C318	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C319	1-162-949-11	CERAMIC CHIP 47PF	5%	50V	
C320	1-162-956-11	CERAMIC CHIP 180PF	5%	50V	
C321	1-164-382-11	CERAMIC CHIP 91PF	5%	50V	
C322	1-162-949-11	CERAMIC CHIP 47PF	5%	50V	
C323	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C324	1-162-952-11	CERAMIC CHIP 82PF	5%	50V	
C325	1-162-967-11	CERAMIC CHIP 0.0033MF	10%	50V	
C326	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V	
C327	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C329	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C330	1-162-939-11	CERAMIC CHIP 8PF	0.5PF	50V	
C331	1-162-958-11	CERAMIC CHIP 270PF	5%	50V	
C333	1-162-936-11	CERAMIC CHIP 5PF	0.25PF	50V	
C334	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V	
C335	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C336	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C337	1-162-942-11	CERAMIC CHIP 12PF	5%	50V	
C338	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V	
C340	1-162-948-11	CERAMIC CHIP 39PF	5%	50V	
C344	1-162-941-11	CERAMIC CHIP 10PF	0.5PF	50V	
C345	1-162-953-11	CERAMIC CHIP 100PF	5%	50V	
C346	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C347	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C348	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C349	1-163-118-00	CERAMIC CHIP 110PF	5%	50V	
C350	1-162-959-11	CERAMIC CHIP 330PF	5%	50V	
C351	1-135-177-21	TANTAL. CHIP 1MF	20%	20V	
C352	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C353	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V	
C354	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V	
C355	1-135-177-21	TANTAL. CHIP 1MF	20%	20V	
C356	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C358	1-162-638-11	CERAMIC CHIP 1MF		16V	
C359	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C366	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C371	1-162-954-11	CERAMIC CHIP 120PF	5%	50V	
C501	1-130-495-00	MYLAR 0.1MF	5%	50V	
C502	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V	
C503	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V	

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description		Remark
C504	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C505	1-163-037-11	CERAMIC CHIP 0.022MF	10%	25V
C506	1-162-967-11	CERAMIC CHIP 0.0033MF	10%	50V
C507	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C508	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C509	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C510	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C511	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V
C512	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C513	1-124-779-00	ELECT CHIP 10MF	20%	16V
C514	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C515	1-135-149-21	TANTAL. CHIP 2.2MF	20%	10V
C516	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C518	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C519	1-162-969-11	CERAMIC CHIP 0.0068MF	10%	25V
C520	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C521	1-162-638-11	CERAMIC CHIP 1MF		16V
C522	1-127-511-81	ELECT(SOLID) 4.7MF		16V
C523	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C524	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C525	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C526	1-163-075-00	CERAMIC CHIP 0.047MF	10%	25V
C530	1-164-107-11	CERAMIC CHIP 0.15MF	10%	16V
C531	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C532	1-164-107-11	CERAMIC CHIP 0.15MF	10%	16V
C542	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V
C543	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C544	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V
C546	1-164-004-11	CERAMIC CHIP 0.1MF	10%	25V
C547	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C548	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C549	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C550	1-162-638-11	CERAMIC CHIP 1MF		16V
C551	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C552	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V
C553	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C554	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V
C555	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C556	1-162-638-11	CERAMIC CHIP 1MF		16V
C557	1-162-638-11	CERAMIC CHIP 1MF		16V
C558	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C559	1-162-921-11	CERAMIC CHIP 33PF	5%	50V
C560	1-162-921-11	CERAMIC CHIP 33PF	5%	50V
C561	1-162-638-11	CERAMIC CHIP 1MF		16V
C562	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C563	1-163-141-00	CERAMIC CHIP 0.001MF	5%	50V
C564	1-162-949-11	CERAMIC CHIP 47PF	5%	50V
C565	1-163-145-00	CERAMIC CHIP 0.0015MF	5%	50V
C566	1-162-945-11	CERAMIC CHIP 22PF	5%	50V
C567	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C571	1-163-038-00	CERAMIC CHIP 0.1MF		25V

Ref.No.	Part No.	Description		Remark
C572	1-164-232-11	CERAMIC CHIP 0.01MF	10%	50V
C573	1-164-634-11	CERAMIC CHIP 1MF		16V
C574	1-163-809-11	CERAMIC CHIP 0.047MF	10%	25V
C601	1-162-916-11	CERAMIC CHIP 12PF	5%	50V
C602	1-162-916-11	CERAMIC CHIP 12PF	5%	50V
C603	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V
C604	1-135-177-21	TANTAL. CHIP 1MF	20%	20V
C606	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C607	1-124-443-00	ELECT 100MF	20%	10V
C608	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C609	1-162-638-11	CERAMIC CHIP 1MF		16V
C610	1-162-638-11	CERAMIC CHIP 1MF		16V
C611	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C612	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C613	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C614	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C615	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C616	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C618	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C620	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C622	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C623	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C624	1-162-960-11	CERAMIC CHIP 220PF	10%	50V
C661	1-162-966-11	CERAMIC CHIP 0.0022MF		50V
C662	1-163-023-00	CERAMIC CHIP 0.015MF		50V
C663	1-163-038-00	CERAMIC CHIP 0.1MF		25V
C664	1-163-133-00	CERAMIC CHIP 470PF	5%	50V
C665	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C666	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C667	1-163-081-00	CERAMIC CHIP 0.22MF		25V
C668	1-163-035-00	CERAMIC CHIP 0.047MF		50V
C681	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C682	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C683	1-162-962-11	CERAMIC CHIP 470PF	10%	50V
C690	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C691	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V

CONNECTOR

Ref.No.	Part No.	Description		Remark
CN101	1-566-531-11	CONNECTOR, FPC (ZIF) 15P		
CN201	1-566-542-31	CONNECTOR, FPC (NON ZIF) 10P		
CN202	1-568-342-41	CONNECTOR, BOARD TO BOARD 7P		
CN203	1-568-333-11	CONNECTOR, BOARD TO BOARD 14P		
CN204	1-568-364-41	CONNECTOR, BOARD TO BOARD 12P		
CN205	*1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P		
CN206	*1-565-876-11	PIN, CONNECTOR (PC BOARD) 4P		
CN501	1-566-541-11	CONNECTOR, FPC (NON ZIF) 9P		
CN502	1-565-662-11	CONNECTOR (PC BOARD) 15P		
CN601	1-566-538-11	CONNECTOR, FPC (NON ZIF) 6P		
CN602	1-566-546-11	CONNECTOR, FPC (NON ZIF) 14P		
CN603	1-568-367-41	CONNECTOR, BOARD TO BOARD 18P		

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
CN604	1-568-334-11	CONNECTOR, BOARD TO BOARD 16P	
CN605	1-568-329-11	CONNECTOR, BOARD TO BOARD 17P	
CN607	1-565-527-11	PIN, CONNECTOR (PC BOARD) 2P	

DIODE

Ref.No.	Part No.	Description	Remark
D201	8-719-404-46	DIODE MA110	
D211	8-719-118-21	DIODE 1SS283	
D213	8-719-404-35	DIODE MA141WK	
D214	8-719-404-35	DIODE MA141WK	
D215	8-719-800-76	DIODE 1SS226	
D216	8-719-404-46	DIODE MA110	
D217	8-719-404-46	DIODE MA110	
D218	8-719-404-46	DIODE MA110	
D601	8-719-404-40	DIODE MA121	
D602	8-719-404-40	DIODE MA121	
D603	8-719-404-40	DIODE MA121	
D604	8-719-404-40	DIODE MA121	
D605	8-719-404-46	DIODE MA110	
D606	8-719-404-46	DIODE MA110	
D681	8-719-404-46	DIODE MA110	

FILTER

Ref.No.	Part No.	Description	Remark
FL201	1-236-186-11	FILTER, BAND PASS	
FL202	1-409-446-11	FILTER, TRAP	
FL203	1-577-162-11	FILTER, CERAMIC	

IC

Ref.No.	Part No.	Description	Remark
IC101	8-752-033-38	IC CXA1202R	
IC102	8-752-033-38	IC CXA1202R	
IC201	8-752-033-40	IC CXA1201Q	
IC202	8-752-324-87	IC CXL1502M	
IC203	8-752-034-40	IC CXA1200BQ	
IC204	8-759-605-61	IC CXA1203N	
IC205	8-759-009-22	IC MC14094BF	
IC501	8-759-990-55	IC CXA8006M	
IC502	8-759-148-05	IC CXA8010M	
IC504	8-752-038-71	IC CXA1127AM	
IC505	8-752-035-48	IC CXA1204Q	
IC601	8-752-816-62	IC CXP80116-690Q	
IC602	8-759-990-78	IC S-81350AG-REG	
IC603	8-759-987-66	IC TL7757	
IC604	8-759-100-95	IC UPC324G2	
IC605	8-759-030-64	IC MPC1710AM	
IC607	8-759-100-93	IC UPC393G2	

COIL

Ref.No.	Part No.	Description	Remark
L101	1-412-033-11	INDUCTOR CHIP 220UH	
L102	1-410-385-11	INDUCTOR CHIP 22UH	
L103	1-412-033-11	INDUCTOR CHIP 220UH	
L104	1-410-385-11	INDUCTOR CHIP 22UH	
L161	1-412-029-11	INDUCTOR CHIP 10UH	
L162	1-412-029-11	INDUCTOR CHIP 10UH	
L191	1-412-033-11	INDUCTOR CHIP 220UH	
L192	1-410-381-11	INDUCTOR CHIP 10UH	
L201	1-410-393-11	INDUCTOR CHIP 100UH	
L202	1-410-393-11	INDUCTOR CHIP 100UH	
L203	1-412-031-11	INDUCTOR CHIP 47UH	
L204	1-412-031-11	INDUCTOR CHIP 47UH	
L205	1-410-388-21	INDUCTOR CHIP 39UH	
L207	1-410-393-11	INDUCTOR CHIP 100UH	
L208	1-410-387-11	INDUCTOR CHIP 33UH	
L209	1-410-390-11	INDUCTOR CHIP 56UH	
L210	1-412-029-11	INDUCTOR CHIP 10UH	
L211	1-410-389-31	INDUCTOR CHIP 47UH	
L212	1-410-393-11	INDUCTOR CHIP 100UH	
L213	1-410-377-31	INDUCTOR CHIP 4.7UH	
L214	1-408-797-11	INDUCTOR CHIP 470UH	
L215	1-408-795-21	INDUCTOR CHIP 330UH	
L216	1-410-388-21	INDUCTOR CHIP 39UH	
L217	1-408-795-21	INDUCTOR CHIP 330UH	
L218	1-410-393-11	INDUCTOR CHIP 100UH	
L219	1-410-380-31	INDUCTOR CHIP 8.2UH	
L220	1-408-795-21	INDUCTOR CHIP 330UH	
L221	1-410-655-31	INDUCTOR CHIP 120UH	
L222	1-412-138-21	INDUCTOR CHIP 100UH	
L223	1-410-656-41	INDUCTOR CHIP 150UH	
L224	1-410-657-21	INDUCTOR CHIP 180UH	
L225	1-410-387-11	INDUCTOR CHIP 33UH	
L226	1-410-657-21	INDUCTOR CHIP 180UH	
L227	1-410-381-11	INDUCTOR CHIP 10UH	
L228	1-412-029-11	INDUCTOR CHIP 10UH	
L229	1-410-393-11	INDUCTOR CHIP 100UH	
L230	1-410-393-11	INDUCTOR CHIP 100UH	
L231	1-410-658-31	INDUCTOR CHIP 220UH	
L502	1-408-795-21	INDUCTOR CHIP 330UH	
L503	1-412-032-11	INDUCTOR CHIP 100UH	
L504	1-412-032-11	INDUCTOR CHIP 100UH	
L601	1-412-031-11	INDUCTOR CHIP 47UH	
L602	1-412-031-11	INDUCTOR CHIP 47UH	

IC LINK

Ref.No.	Part No.	Description	Remark
PS601⚠	1-532-605-00	LINK, IC ICP-N10 0.4A	
PS602⚠	1-532-685-00	LINK, IC ICP-N20 0.8A	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q101	8-729-209-07	TRANSISTOR 2SC4213-8	
Q102	8-729-209-07	TRANSISTOR 2SC4213-8	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark
Q103	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q104	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q105	8-729-209-07	TRANSISTOR 2SC4213-8	
Q106	8-729-209-07	TRANSISTOR 2SC4213-8	
Q107	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q108	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q109	8-729-402-42	TRANSISTOR UN5213	
Q161	8-729-403-35	TRANSISTOR UN5113	
Q162	8-729-117-32	TRANSISTOR 2SC4177	
Q164	8-729-402-42	TRANSISTOR UN5213	
Q165	8-729-402-42	TRANSISTOR UN5213	
Q166	8-729-402-42	TRANSISTOR UN5213	
Q167	8-729-402-42	TRANSISTOR UN5213	
Q191	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q193	8-729-216-22	TRANSISTOR 2SA1162	
Q201	8-729-101-07	TRANSISTOR 2SB798-DL	
Q202	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q203	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q204	8-729-402-42	TRANSISTOR UN5213	
Q205	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q206	8-729-907-00	TRANSISTOR DTC114EU	
Q207	8-729-140-88	TRANSISTOR FP1A3M	
Q208	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q209	8-729-402-42	TRANSISTOR UN5213	
Q211	8-729-905-61	TRANSISTOR DTC124EU	
Q212	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q213	8-729-117-32	TRANSISTOR 2SC4177	
Q214	8-729-117-32	TRANSISTOR 2SC4177	
Q215	8-729-117-16	TRANSISTOR 2SA1161-M6	
Q216	8-729-117-32	TRANSISTOR 2SC4177	
Q217	8-729-102-07	TRANSISTOR 2SC222-F13	
Q218	8-729-117-32	TRANSISTOR 2SC4177	
Q219	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q220	8-729-117-32	TRANSISTOR 2SC4177	
Q221	8-729-403-35	TRANSISTOR UN5113	
Q222	8-729-117-32	TRANSISTOR 2SC4177	
Q223	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q224	8-729-403-35	TRANSISTOR UN5113	
Q225	8-729-117-32	TRANSISTOR 2SC4177	
Q226	8-729-807-87	TRANSISTOR 2SB1295-UL6	
Q227	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q228	8-729-117-32	TRANSISTOR 2SC4177	
Q229	8-729-905-15	TRANSISTOR DTC144WU	
Q230	8-729-117-32	TRANSISTOR 2SC4177	
Q231	8-729-905-15	TRANSISTOR DTC144WU	
Q232	8-729-140-88	TRANSISTOR FP1A3M	
Q233	8-729-117-32	TRANSISTOR 2SC4177	
Q234	8-729-117-32	TRANSISTOR 2SC4177	
Q235	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q236	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q237	8-729-117-16	TRANSISTOR 2SA1611-M6	
Q238	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q239	8-729-102-07	TRANSISTOR 2SC4177	
Q241	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q242	8-729-402-42	TRANSISTOR UN5213	
Q243	8-729-403-35	TRANSISTOR UN5113	
Q244	8-729-420-12	TRANSISTOR XN4213-TW	
Q245	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q246	8-729-117-32	TRANSISTOR 2SC4177	
Q247	8-729-117-32	TRANSISTOR 2SC4177	
Q248	8-729-403-35	TRANSISTOR UN5113	
Q249	8-729-420-12	TRANSISTOR XN4213	
Q250	8-729-403-35	TRANSISTOR UN5113	
Q251	8-729-402-42	TRANSISTOR UN5213	
Q252	8-729-117-32	TRANSISTOR 2SC4177	
Q253	8-729-117-32	TRANSISTOR 2SC4177	
Q254	8-729-403-35	TRANSISTOR UN5113	
Q255	8-729-921-08	TRANSISTOR DTC144TU	
Q256	8-729-402-42	TRANSISTOR UN5213	
Q258	8-729-921-08	TRANSISTOR DTC144TU	
Q259	8-729-921-58	TRANSISTOR DTA144TU	
Q260	8-729-117-32	TRANSISTOR 2SC4177	
Q261	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q270	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q272	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q501	8-729-920-39	TRANSISTOR IMT1US	
Q502	8-729-822-94	TRANSISTOR FC102-TR	
Q503	8-729-822-94	TRANSISTOR FC102-TR	
Q541	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q542	8-729-117-32	TRANSISTOR 2SC4177	
Q543	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q571	8-729-920-39	TRANSISTOR IMT1US	
Q572	8-729-920-39	TRANSISTOR IMT1US	
Q573	8-729-117-32	TRANSISTOR 2SC4177	
Q601	8-729-403-24	TRANSISTOR XN4210	
Q602	8-729-403-24	TRANSISTOR XN4210	
Q603	8-729-403-24	TRANSISTOR XN4210	
Q604	8-729-403-24	TRANSISTOR XN4210	
Q606	8-729-403-24	TRANSISTOR XN4210	
Q607	8-729-403-24	TRANSISTOR XN4210	
Q608	8-729-403-24	TRANSISTOR XN4210	
Q609	8-729-403-24	TRANSISTOR XN4210	
Q610	8-729-403-24	TRANSISTOR XN4210	
Q611	8-729-420-12	TRANSISTOR XN4213	
Q612	8-729-403-35	TRANSISTOR UN5113	
Q613	8-729-402-42	TRANSISTOR UN5213	
Q614	8-729-903-97	TRANSISTOR FMS1FE	
Q615	8-729-903-82	TRANSISTOR FMW2	
Q616	8-729-117-32	TRANSISTOR 2SC4177	
Q617	8-729-903-97	TRANSISTOR FMS1FE	
Q618	8-729-903-97	TRANSISTOR FMS1FE	
Q619	8-729-907-00	TRANSISTOR DTC114EU	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
Q620	8-729-421-90	TRANSISTOR XN4113	
Q621	8-729-420-12	TRANSISTOR XN4213	
Q622	8-729-422-14	TRANSISTOR XN4111	
Q623	8-729-117-32	TRANSISTOR 2SC4177	
Q624	8-729-422-14	TRANSISTOR XN4111	
Q643	8-729-403-24	TRANSISTOR XN4210	
Q644	8-729-403-35	TRANSISTOR UN5113	
Q645	8-729-402-42	TRANSISTOR UN5213	
Q661	8-729-117-32	TRANSISTOR 2SC4177	
Q662	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q663	8-729-117-32	TRANSISTOR 2SC4177	
Q664	8-729-140-63	TRANSISTOR 2SA1611-M5M6	
Q665	8-729-117-32	TRANSISTOR 2SC4177	
Q681	8-729-117-32	TRANSISTOR 2SC4177	
Q682	8-729-820-46	TRANSISTOR 2SB1202FAS	
Q683	8-729-902-93	TRANSISTOR FMG4	
Q684	8-729-903-97	TRANSISTOR FMS1FE	
		RESISTOR	
R101	1-216-838-11	METAL GLAZE 27K 5% 1/16W	
R102	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R103	1-216-840-11	METAL GLAZE 39K 5% 1/16W	
R104	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R105	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R106	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R107	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R108	1-216-840-11	METAL GLAZE 39K 5% 1/16W	
R109	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R110	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R111	1-216-838-11	METAL GLAZE 27K 5% 1/16W	
R112	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R113	1-216-840-11	METAL GLAZE 39K 5% 1/16W	
R114	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R115	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R116	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R117	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R118	1-216-840-11	METAL GLAZE 39K 5% 1/16W	
R119	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R120	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R121	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R122	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R123	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R124	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R125	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R126	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R127	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R128	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R129	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R130	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R131	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R132	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R134	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R135	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R139	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R140	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R141	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R142	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R143	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R144	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R161	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R162	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R163	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R164	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R165	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R166	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R167	1-216-843-11	METAL GLAZE 68K 5% 1/16W	
R168	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R170	1-216-847-11	METAL GLAZE 150K 5% 1/16W	
R171	1-216-847-11	METAL GLAZE 150K 5% 1/16W	
R172	1-216-847-11	METAL GLAZE 150K 5% 1/16W	
R173	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R174	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R175	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R176	1-216-791-11	METAL GLAZE 3.3 5% 1/16W	
R177	1-216-791-11	METAL GLAZE 3.3 5% 1/16W	
R178	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R179	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R191	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R192	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R193	1-216-815-11	METAL GLAZE 330 5% 1/16W	
R194	1-216-817-11	METAL GLAZE 470 5% 1/16W	
R197	1-216-801-11	METAL GLAZE 22 5% 1/16W	
R198	1-216-818-11	METAL GLAZE 560 5% 1/16W	
R201	1-216-804-11	METAL GLAZE 39 5% 1/16W	
R202	1-216-804-11	METAL GLAZE 39 5% 1/16W	
R203	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R204	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R205	1-216-791-11	METAL GLAZE 3.3 5% 1/16W	
R206	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R207	1-216-822-11	METAL GLAZE 1.2K 5% 1/16W	
R208	1-216-831-11	METAL GLAZE 6.8K 5% 1/16W	
R209	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R210	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R211	1-216-022-00	METAL GLAZE 75 5% 1/10W	
R214	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R215	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R216	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R217	1-216-699-11	METAL CHIP 100K 0.50% 1/10W	
R218	1-216-840-11	METAL GLAZE 39K 5% 1/16W	
R219	1-216-821-11	METAL GLAZE 1K 5% 1/16W	

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description				Remark
R220	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R221	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R222	1-216-814-11	METAL GLAZE	270	5%	1/16W	
R223	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R224	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R225	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R226	1-216-815-11	METAL GLAZE	330	5%	1/16W	
R227	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R228	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R229	1-216-810-11	METAL GLAZE	120	5%	1/16W	
R230	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R231	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R232	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R233	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R234	1-216-811-11	METAL GLAZE	150	5%	1/16W	
R235	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R236	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R237	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R238	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R239	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R240	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R243	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R244	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R245	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R246	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R247	1-216-807-11	METAL GLAZE	68	5%	1/16W	
R249	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R250	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R251	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R252	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R253	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R254	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R255	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R256	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R257	1-216-853-11	METAL GLAZE	470K	5%	1/16W	
R258	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R259	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R260	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R261	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R262	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R263	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R264	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R265	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R266	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R267	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R268	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R269	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R270	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R271	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R272	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R273	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	

Ref.No.	Part No.	Description				Remark
R274	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R275	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R276	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R277	1-216-810-11	METAL GLAZE	120	5%	1/16W	
R278	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R279	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R280	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R281	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R282	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R283	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R284	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R285	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R286	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	
R287	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R288	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R289	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R290	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R291	1-216-855-11	METAL GLAZE	680K	5%	1/16W	
R293	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R294	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R295	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R296	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R297	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R298	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R300	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R301	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R302	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R303	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R304	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R305	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R306	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R311	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R315	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R316	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R317	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R318	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R319	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R320	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R321	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R322	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R325	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R326	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R327	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R328	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R329	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R330	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R331	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R332	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R333	1-216-809-11	METAL GLAZE	100	5%	1/16W	
R334	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R335	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description				Remark
R336	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R337	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R338	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R339	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R341	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R342	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R343	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R344	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R345	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R346	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R347	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R348	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R349	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R352	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R354	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R355	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R356	1-216-808-11	METAL GLAZE	82	5%	1/16W	
R357	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R358	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R359	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R360	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R361	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R362	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R363	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R364	1-216-805-11	METAL GLAZE	47	5%	1/16W	
R365	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R369	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R377	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R378	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R379	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R380	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R381	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R382	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R390	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R391	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R393	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R394	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R396	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R501	1-216-336-11	METAL GLAZE	47K	1%	1/10W	
R502	1-216-336-11	METAL GLAZE	47K	1%	1/10W	
R503	1-216-870-11	METAL GLAZE	180K	1%	1/10W	
R504	1-216-687-11	METAL CHIP	33K	0.50%	1/10W	
R505	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W	
R506	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R507	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R508	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R509	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R510	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R511	1-216-816-11	METAL GLAZE	390	5%	1/16W	
R512	1-217-671-11	METAL GLAZE	1	5%	1/10W	
R513	1-217-671-11	METAL GLAZE	1	5%	1/10W	

Ref.No.	Part No.	Description				Remark
R514	1-217-671-11	METAL GLAZE	1	5%	1/10W	
R515	1-217-671-11	METAL GLAZE	1	5%	1/10W	
R520	1-216-815-11	METAL GLAZE	330	5%	1/16W	
R521	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R522	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R526	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R527	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R528	1-216-789-11	METAL GLAZE	2.2	5%	1/16W	
R529	1-216-789-11	METAL GLAZE	2.2	5%	1/16W	
R530	1-216-789-11	METAL GLAZE	2.2	5%	1/16W	
R531	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R532	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R533	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R534	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R535	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R536	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R537	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R543	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R544	1-216-814-11	METAL GLAZE	270	5%	1/16W	
R545	1-216-812-11	METAL GLAZE	180	5%	1/16W	
R548	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R549	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R550	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R551	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R552	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R553	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R554	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R555	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R556	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R557	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R558	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R559	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R560	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R571	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R572	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R573	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R574	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R575	1-216-840-11	METAL GLAZE	39K	5%	1/16W	
R576	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R577	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R580	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R590	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R591	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R592	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R593	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R594	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R595	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R597	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R598	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R601	1-216-846-11	METAL GLAZE (E, Australian)	0	5%	1/16W	

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description				Remark
R602	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R604	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R605	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R610	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R611	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R612	1-216-852-11	METAL GLAZE	390K	5%	1/16W	
R613	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R614	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R615	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R616	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R617	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R618	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R619	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R620	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R621	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R622	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R625	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R626	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R627	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R628	1-216-853-11	METAL GLAZE	470K	5%	1/16W	
R633	1-216-176-00	METAL GLAZE	120	5%	1/8W	
R634	1-216-174-00	METAL GLAZE	100	5%	1/8W	
R635	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R645	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R646	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R647	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R648	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R661	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R662	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R663	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R664	1-216-809-11	METAL GLAZE	100	5%	1/16W	
R665	1-216-810-11	METAL GLAZE	120	5%	1/16W	
R666	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R667	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R668	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R669	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R670	1-216-824-11	METAL GLAZE	1.8K	5%	1/16W	
R671	1-216-838-11	METAL GLAZE	27K	5%	1/16W	
R672	1-216-854-11	METAL GLAZE	560K	5%	1/16W	
R673	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R674	1-216-851-11	METAL GLAZE	330K	5%	1/16W	
R675	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R676	1-216-861-11	METAL GLAZE	2.2M	5%	1/16W	
R678	1-216-847-11	METAL GLAZE	150K	5%	1/16W	
R679	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R681	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R682	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R683	1-216-194-00	METAL GLAZE	680	5%	1/8W	
R684	1-216-194-00	METAL GLAZE	680	5%	1/8W	
R685	1-216-194-00	METAL GLAZE	680	5%	1/8W	
R686	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R687	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R688	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R689	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R690	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R691	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R695	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R696	1-217-671-11	METAL GLAZE	1	5%	1/10W	
R697	1-217-671-11	METAL GLAZE	1	5%	1/10W	
R698	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R699	1-216-833-11	METAL GLAZE	10K	5%	1/16W	

NETWORK RESISTOR

Ref.No.	Part No.	Description	Remark
RB101	1-236-420-11	NETWORK, RES 4.7K	
RB102	1-236-420-11	NETWORK, RES 4.7K	
RB107	1-236-420-11	NETWORK, RES 4.7K	
RB108	1-236-420-11	NETWORK, RES 4.7K	
RB201	1-236-424-11	NETWORK, RES 10K	
RB204	1-236-408-11	NETWORK, RES 470	
RB205	1-236-409-11	NETWORK, RES 560	
RB207	1-236-436-11	NETWORK, RES 100K	
RB208	1-236-412-11	NETWORK, RES 1.0K	
RB209	1-236-420-11	NETWORK, RES 4.7K	
RB502	1-236-424-11	NETWORK, RES 10K	
RB541	1-236-408-11	NETWORK, RES 470	
RB542	1-236-418-11	NETWORK, RES 3.3K	
RB543	1-236-418-11	NETWORK, RES 3.3K	
RB601	1-236-436-11	NETWORK, RES 100K	
RB602	1-236-436-11	NETWORK, RES 100K	
RB603	1-236-436-11	NETWORK, RES 100K	
RB604	1-236-436-11	NETWORK, RES 100K	
RB605	1-236-436-11	NETWORK, RES 100K	
RB606	1-236-436-11	NETWORK, RES 100K	
RB607	1-236-436-11	NETWORK, RES 100K	
RB608	1-236-436-11	NETWORK, RES 100K	
RB609	1-236-436-11	NETWORK, RES 100K	
RB610	1-236-424-11	NETWORK, RES 10K	
RB611	1-236-424-11	NETWORK, RES 10K	
RB612	1-236-424-11	NETWORK, RES 10K	
RB614	1-236-424-11	NETWORK, RES 10K	
RB615	1-236-436-11	NETWORK, RES 100K	
RB616	1-236-424-11	NETWORK, RES 10K	
RB617	1-236-431-11	NETWORK, RES 39K	
RB618	1-236-432-11	NETWORK, RES 47K	
RB619	1-236-424-11	NETWORK, RES 10K	
RB620	1-236-408-11	NETWORK, RES 470	
RB621	1-236-408-11	NETWORK, RES 470	
RB661	1-236-424-11	NETWORK, RES 10K	
RB662	1-236-442-11	NETWORK, RES 330K	
RB682	1-236-424-11	NETWORK, RES 10K	

When indicating parts by reference number, please include the board name.

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV101	1-238-089-11	RES, ADJ, CERMET 4.7K	
RV102	1-238-089-11	RES, ADJ, CERMET 4.7K	
RV103	1-238-089-11	RES, ADJ, CERMET 4.7K	
RV104	1-238-089-11	RES, ADJ, CERMET 4.7K	
RV111	1-238-092-11	RES, ADJ, CERMET 47K	
RV112	1-238-092-11	RES, ADJ, CERMET 47K	
RV113	1-238-092-11	RES, ADJ, CERMET 47K	
RV114	1-238-092-11	RES, ADJ, CERMET 47K	
RV201	1-238-092-11	RES, ADJ, CERMET 47K	
RV202	1-238-087-11	RES, ADJ, CERMET 1K	
RV203	1-238-088-11	RES, ADJ, CERMET 2.2K	
RV204	1-238-089-11	RES, ADJ, CERMET 4.7K	
RV205	1-238-088-11	RES, ADJ, CERMET 2.2K	
RV206	1-238-092-11	RES, ADJ, CERMET 47K	
RV207	1-238-090-11	RES, ADJ, CERMET 10K	
RV208	1-238-086-11	RES, ADJ, CERMET 470	
RV209	1-238-087-11	RES, ADJ, CERMET 1K	
RV210	1-238-086-11	RES, ADJ, CERMET 470	
RV212	1-238-089-11	RES, ADJ, CERMET 4.7K	
RV213	1-238-090-11	RES, ADJ, CERMET 10K	
RV502	1-238-095-11	RES, ADJ, CERMET 470K	
RV602	1-238-092-11	RES, ADJ, CERMET 47K	

FLEXIBLE BOARD

Ref.No.	Part No.	Description	Remark
W604	1-630-592-11	PC BOARD, FP-184 FLEXIBLE	
W605	1-635-759-11	PC BOARD, FP-330 FLEXIBLE	

CRYSTAL

Ref.No.	Part No.	Description	Remark
X201	1-577-117-21	VIBRATOR, CRYSTAL (4.43MHz)	
X501	1-578-709-11	VIBRATOR, CRYSTAL (5.85938MHz)	
X601	1-577-349-21	VIBRATOR, CRYSTAL (16MHz)	

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*A-7062-390-A LD-36 BOARD, COMPLETE (Ref.No.3,000
********************* series)

CAPACITOR

Ref.No.	Part No.	Description			Remark
C701	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C702	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C703	1-162-968-11	CERAMIC CHIP 0.0047MF	10%	50V	
C706	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C707	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V	
C708	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C709	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C710	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C711	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V	
C713	1-163-075-00	CERAMIC CHIP 0.047MF	10%	25V	
C714	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C715	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C716	1-162-637-11	CERAMIC CHIP 0.47MF		16V	

CONNECTOR

Ref.No.	Part No.	Description	Remark
CN701	1-568-336-11	CONNECTOR, BOARD TO BOARD 20P	
CN702	1-566-540-11	CONNECTOR, FPC (NON ZIF) 8P	
CN703	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P	
CN704	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P	
CN705	*1-565-542-11	PIN, CONNECTOR (PC BOARD) 3P	
CN706	*1-565-541-11	PIN, CONNECTOR (PC BOARD) 2P	

DIODE

Ref.No.	Part No.	Description	Remark
D701	8-719-404-46	DIODE MA110	

IC

Ref.No.	Part No.	Description	Remark
IC701	8-759-037-20	IC MPC1737M	
IC702	8-759-100-94	IC UPC358G2	
IC703	8-759-981-82	IC RC3414M	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q701	8-729-905-15	TRANSISTOR DTC144WU	
Q702	8-729-920-39	TRANSISTOR IMT1US	
Q703	8-729-905-61	TRANSISTOR DTC124EU	
Q704	8-729-602-36	TRANSISTOR 2SA1602	
Q706	8-729-805-25	TRANSISTOR 2SB1121	
Q707	8-729-117-32	TRANSISTOR 2SC4177	

RESISTOR

Ref.No.	Part No.	Description				Remark
R701	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R702	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R703	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R705	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R707	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R708	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R709	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R710	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R712	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R713	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R714	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R715	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R716	1-216-309-00	METAL GLAZE	5.6	5%	1/10W	
R717	1-216-791-11	METAL GLAZE	3.3	5%	1/16W	
R718	1-216-791-11	METAL GLAZE	3.3	5%	1/16W	
R719	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R720	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
R723	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R725	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R726	1-216-819-11	METAL GLAZE 680 5% 1/16W	
R727	1-216-843-11	METAL GLAZE 68K 5% 1/16W	
R730	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R731	1-216-843-11	METAL GLAZE 68K 5% 1/16W	
R732	1-216-835-11	METAL GLAZE 15K 5% 1/16W	
R733	1-216-830-11	METAL GLAZE 5.6K 5% 1/16W	
R734	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R735	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R736	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R737	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R738	1-216-843-11	METAL GLAZE 68K 5% 1/16W	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV701	1-238-094-11	RES, ADJ, CERMET 220K	

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Ref.No.	Part No.	Description	Remark
	*A-7062-391-A	VC-84 BOARD, COMPLETE (Ref.No.2,000 ********************* series)	
	A-7068-181-A	DT-77K BOARD, COMPLETE (HIC)	
	1-635-396-11	PC BOARD, FP-362	
	1-635-760-11	PC BOARD, FP-331	

CAPACITOR

Ref.No.	Part No.	Description	Remark
C101	1-135-211-11	TANTAL. CHIP 6.8MF 20% 6.3V	
C102	1-135-162-21	TANTAL. CHIP 33MF 20% 6.3V	
C103	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C104	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C105	1-135-162-21	TANTAL. CHIP 33MF 20% 6.3V	
C108	1-126-607-11	ELECT CHIP 47MF 20% 4V	
C109	1-135-181-21	TANTAL. CHIP 4.7MF 20% 6.3V	
C112	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C131	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C132	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C133	1-164-633-11	CERAMIC CHIP 0.1MF 10% 25V	
C134	1-135-079-21	TANTAL. CHIP 3.3MF 20% 35V	
C136	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C137	1-135-177-21	TANTAL. CHIP 1MF 20% 20V	
C138	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C141	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C142	1-164-633-11	CERAMIC CHIP 0.1MF 10% 25V	
C143	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C145	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C149	1-164-337-11	CERAMIC CHIP 2.2MF 16V	
C151	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C152	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C153	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C154	1-162-913-11	CERAMIC CHIP 8PF 5% 50V	
C156	1-162-910-11	CERAMIC CHIP 5PF 0.25PF 50V	
C157	1-162-910-11	CERAMIC CHIP 5PF 0.25PF 50V	
C158	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C180	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C181	1-135-177-21	TANTAL. CHIP 1MF 20% 20V	
C182	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C183	1-162-950-11	CERAMIC CHIP 56PF 5% 50V	
C184	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C185	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C186	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C187	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C188	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C189	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C191	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C192	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C196	1-164-217-11	CERAMIC CHIP 150PF 0.25PF 50V	
C197	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	
C198	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C199	1-162-925-11	CERAMIC CHIP 68PF 5% 50V	
C200	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C201	1-162-945-11	CERAMIC CHIP 22PF 5% 50V	
C202	1-162-638-11	CERAMIC CHIP 1MF 16V	
C203	1-162-638-11	CERAMIC CHIP 1MF 16V	
C204	1-162-638-11	CERAMIC CHIP 1MF 16V	
C205	1-162-638-11	CERAMIC CHIP 1MF 16V	
C206	1-162-638-11	CERAMIC CHIP 1MF 16V	
C210	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C211	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C212	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C213	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C214	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C215	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C216	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C217	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C219	1-162-638-11	CERAMIC CHIP 1MF 16V	
C220	1-162-638-11	CERAMIC CHIP 1MF 16V	
C221	1-162-638-11	CERAMIC CHIP 1MF 16V	
C222	1-162-638-11	CERAMIC CHIP 1MF 16V	
C223	1-162-638-11	CERAMIC CHIP 1MF 16V	
C224	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C225	1-162-638-11	CERAMIC CHIP 1MF 16V	
C229	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C230	1-135-211-11	TANTAL. CHIP 6.8MF 20% 6.3V	
C232	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C233	1-162-942-11	CERAMIC CHIP 12PF 5% 50V	
C234	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C235	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C236	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C237	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C238	1-163-119-00	CERAMIC CHIP 120PF 5% 50V	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description		Remark
C239	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C241	1-162-953-11	CERAMIC CHIP 100PF	5%	50V
C252	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C253	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C254	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C255	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C256	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C261	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C262	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C265	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C266	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C267	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C268	1-162-638-11	CERAMIC CHIP 1MF		16V
C269	1-162-638-11	CERAMIC CHIP 1MF		16V
C272	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C273	1-162-923-11	CERAMIC CHIP 47PF	5%	50V
C274	1-162-925-11	CERAMIC CHIP 68PF	5%	50V
C275	1-162-916-11	CERAMIC CHIP 12PF	5%	50V
C276	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C277	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C279	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C281	1-162-923-11	CERAMIC CHIP 47PF	5%	50V
C282	1-162-925-11	CERAMIC CHIP 68PF	5%	50V
C283	1-162-916-11	CERAMIC CHIP 12PF	5%	50V
C301	1-162-952-11	CERAMIC CHIP 82PF	5%	50V
C304	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C305	1-135-177-21	TANTAL. CHIP 1MF	20%	20V
C306	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C307	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V
C308	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C309	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C310	1-164-005-11	CERAMIC CHIP 0.47MF		25V
C311	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V
C313	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V
C315	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C316	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C317	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C318	1-126-205-11	ELECT CHIP 47MF	20%	6.3V
C319	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C321	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C322	1-162-638-11	CERAMIC CHIP 1MF		16V
C323	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C330	1-162-962-11	CERAMIC CHIP 470PF	10%	50V
C331	1-162-926-11	CERAMIC CHIP 82PF	5%	50V
C332	1-162-919-11	CERAMIC CHIP 22PF	5%	50V
C333	1-162-916-11	CERAMIC CHIP 12PF	5%	50V
C334	1-162-638-11	CERAMIC CHIP 1MF		16V
C336	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C337	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C346	1-162-922-11	CERAMIC CHIP 39PF	5%	50V
C348	1-163-097-00	CERAMIC CHIP 15PF	5%	50V
C349	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C360	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C362	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C363	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C364	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C365	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C366	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C367	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C368	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V
C369	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C370	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C371	1-162-974-11	CERAMIC CHIP 0.01MF		50V
C372	1-135-072-21	TANTAL. CHIP 0.22MF	20%	35V
C373	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V
C374	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C378	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C379	1-135-145-11	TANTAL. CHIP 0.47MF	20%	35V
C380	1-163-115-00	CERAMIC CHIP 82PF	5%	50V
C415	1-162-945-11	CERAMIC CHIP 22PF	5%	50V
C416	1-162-949-11	CERAMIC CHIP 47PF	5%	50V
C501	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C502	1-162-957-11	CERAMIC CHIP 220PF	5%	50V
C503	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C504	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C505	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C506	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C507	1-162-962-11	CERAMIC CHIP 470PF	10%	50V
C508	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C509	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C510	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C511	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C512	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C513	1-162-913-11	CERAMIC CHIP 8PF	0.5PF	50V
C514	1-162-910-11	CERAMIC CHIP 5PF	0.25PF	50V
C515	1-162-920-11	CERAMIC CHIP 27PF	5%	50V
C516	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C517	1-164-337-11	CERAMIC CHIP 2.2MF		16V
C518	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C519	1-162-923-11	CERAMIC CHIP 47PF	5%	50V
C520	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C521	1-163-131-00	CERAMIC CHIP 390PF	5%	50V
C522	1-162-959-11	CERAMIC CHIP 330PF	5%	50V
C523	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C524	1-162-947-11	CERAMIC CHIP 33PF	5%	50V
C525	1-162-954-11	CERAMIC CHIP 120PF	5%	50V
C526	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C528	1-164-156-11	CERAMIC CHIP 0.1MF		25V
C530	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C536	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V
C537	1-135-181-21	TANTAL. CHIP 4.7MF	20%	6.3V
C538	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description			Remark
C539	1-162-970-11	CERAMIC CHIP 0.01MF	10%	25V	
C540	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C541	1-162-944-11	CERAMIC CHIP 18PF	5%	50V	
C545	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C561	1-162-921-11	CERAMIC CHIP 33PF	5%	50V	
C562	1-164-160-11	CERAMIC CHIP 20PF	10%	50V	
C563	1-162-638-11	CERAMIC CHIP 1MF		16V	
C564	1-162-915-11	CERAMIC CHIP 10PF	0.5PF	50V	
C565	1-135-149-21	TANTAL. CHIP 2.2MF	20%	6.3V	
C566	1-135-149-21	TANTAL. CHIP 2.2MF	20%	6.3V	
C567	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C569	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C570	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C571	1-164-227-11	CERAMIC CHIP 0.022MF	10%	25V	
C572	1-162-953-11	CERAMIC CHIP 100PF	5%	50V	
C611	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C612	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C613	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C614	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C616	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C617	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C618	1-135-157-21	TANTAL. CHIP 10MF	20%	6.3V	
C619	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C620	1-162-964-11	CERAMIC CHIP 0.001MF	10%	50V	
C621	1-162-941-11	CERAMIC CHIP 10PF	0.5PF	50V	
C623	1-162-957-11	CERAMIC CHIP 220PF	5%	50V	
C624	1-162-957-11	CERAMIC CHIP 220PF	5%	50V	
C625	1-162-928-11	CERAMIC CHIP 120PF	5%	50V	
C626	1-162-926-11	CERAMIC CHIP 82PF	5%	50V	
C627	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C628	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C629	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C631	1-162-966-11	CERAMIC CHIP 0.0022MF	10%	50V	
C633	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C634	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C636	1-164-005-11	CERAMIC CHIP 0.47MF		25V	
C637	1-135-180-21	TANTAL. CHIP 3.3MF	20%	6.3V	
C638	1-135-177-21	TANTAL. CHIP 1MF	20%	20V	
C639	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C640	1-162-974-11	CERAMIC CHIP 0.01MF		50V	
C643	1-162-957-11	CERAMIC CHIP 220PF	5%	50V	
C644	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C647	1-164-156-11	CERAMIC CHIP 0.1MF		25V	
C648	1-126-814-11	ELECT 100MF	20%	10V	

CONNECTOR

Ref.No.	Part No.	Description	Remark
CN302	1-568-333-11	CONNECTOR, BOARD TO BOARD 14P	
CN304	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P	
CN802	1-568-366-41	CONNECTOR, BOARD TO BOARD 16P	
CN803	1-568-336-51	CONNECTOR, BOARD TO BOARD 20P	
CN804	1-568-366-41	CONNECTOR, BOARD TO BOARD 16P	
CN805	1-568-359-41	CONNECTOR, BOARD TO BOARD 20P	

TRIMMER

Ref.No.	Part No.	Description	Remark
CT141	1-141-368-51	CAP, CHIP TRIMMER (30PF)	
CT142	1-141-368-11	CAP, CHIP TRIMMER	

DIODE

Ref.No.	Part No.	Description	Remark
D101	8-719-404-46	DIODE MA110	
D102	8-719-404-46	DIODE MA110	
D131	8-719-404-32	DIODE MA141WA	
D132	8-719-404-46	DIODE MA110	
D141	8-719-949-46	DIODE 1T32	
D142	8-719-949-46	DIODE 1T32	
D301	8-719-404-46	DIODE MA110	
D361	8-719-404-32	DIODE MA141WA	
D362	8-719-404-46	DIODE MA110	
D561	8-719-404-49	DIODE MA111	
D562	⚠8-719-420-51	DIODE MA729	
D563	8-719-404-46	DIODE MA110	
D564	8-719-404-46	DIODE MA110	
D565	8-719-404-46	DIODE MA110	
D611	8-719-404-32	DIODE MA141WA	

FILTER

Ref.No.	Part No.	Description	Remark
FL181	1-236-266-11	FILTER, LOW PASS (YH)	
FL182	1-236-267-11	FILTER, LOW PASS (YDL)	
FL303	1-415-695-11	DL, LC	
FL501	1-236-589-11	B.P.F	
FL502	1-415-660-11	DL, LC	
FL503	1-236-450-11	LPF	
FL504	1-236-588-11	B.P.F	
FL610	1-236-209-11	FILTER, LOW PASS	

IC

Ref.No.	Part No.	Description	Remark
IC141	8-752-335-85	IC CXD2109Q	
IC181	8-752-034-17	IC CXA1338R	
IC182	8-752-330-15	IC CXL1503N	
IC183	8-752-332-69	IC CXL5504M	
IC251	8-752-034-21	IC CXA1339R	
IC252	8-759-946-00	IC MB88341PFV	
IC253	8-752-039-49	IC CXA1393AN	
IC301	8-752-033-34	IC CXA1072R	
IC302	8-759-946-00	IC MB88341PFV	
IC361	8-759-037-60	IC MC68HC05N4-SC406667	
IC362	8-759-937-56	IC S-8054ALB-LM-S	
IC363	8-759-106-23	IC MC14066BF	
IC364	8-759-100-95	IC UPC324G2	
IC501	8-759-144-23	IC UPC1037GR	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
IC502	8-759-144-23	IC UPC1037GR	
IC503	8-752-031-63	IC CXA1047M	
IC561	8-759-151-23	IC UPD7503GF-J51-3B8	
IC610	8-752-334-49	IC CXD1172AM	
IC611	8-759-502-04	IC MB88346PFV	
IC612	8-752-326-18	IC CXD1204R	
IC613	8-759-037-59	IC MC68HC05C4FU-SC411534	
IC615	8-759-100-94	IC UPC358G2	
IC616	8-759-030-74	IC SC14S66F	

COIL

Ref.No.	Part No.	Description	Remark
L101	1-412-031-11	INDUCTOR CHIP 47UH	
L102	1-412-031-11	INDUCTOR CHIP 47UH	
L141	1-410-391-11	INDUCTOR CHIP 68UH	
L142	1-410-381-11	INDUCTOR CHIP 10UH	
L182	1-412-031-11	INDUCTOR CHIP 47UH	
L183	1-410-381-11	INDUCTOR CHIP 10UH	
L251	1-410-381-11	INDUCTOR CHIP 10UH	
L302	1-410-657-21	INDUCTOR CHIP 180UH	
L303	1-410-204-31	INDUCTOR CHIP 10UH	
L304	1-410-392-11	INDUCTOR CHIP 82UH	
L361	1-410-381-11	INDUCTOR CHIP 10UH	
L401	1-410-192-51	INDUCTOR CHIP 1UH	
L402	1-410-192-51	INDUCTOR CHIP 1UH	
L403	1-412-026-11	INDUCTOR CHIP 1UH	
L404	1-410-192-51	INDUCTOR CHIP 1UH	
L501	1-410-381-11	INDUCTOR CHIP 10UH	
L502	1-410-658-31	INDUCTOR CHIP 220UH	
L503	1-410-388-21	INDUCTOR CHIP 39UH	
L509	1-410-381-11	INDUCTOR CHIP 10UH	
L561	1-410-369-11	INDUCTOR CHIP 1UH	
L610	1-410-381-11	INDUCTOR CHIP 10UH	
L611	1-410-389-31	INDUCTOR CHIP 47UH	
L612	1-410-655-31	INDUCTOR CHIP 120UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q101	8-729-907-47	TRANSISTOR IMZ1T108	
Q102	8-729-907-47	TRANSISTOR IMZ1T108	
Q106	8-729-602-36	TRANSISTOR 2SA1602	
Q107	8-729-907-47	TRANSISTOR IMZ1T108	
Q111	8-729-907-47	TRANSISTOR IMZ1T108	
Q112	8-729-907-47	TRANSISTOR IMZ1T108	
Q113	8-729-921-58	TRANSISTOR DTA144TU	
Q131	8-729-421-23	TRANSISTOR XN1216	
Q132	8-729-117-32	TRANSISTOR 2SC4177	
Q135	8-729-403-42	TRANSISTOR XN1401	
Q141	8-729-117-32	TRANSISTOR 2SC4177	
Q142	8-729-117-32	TRANSISTOR 2SC4177	
Q181	8-729-117-32	TRANSISTOR 2SC4177	
Q182	8-729-402-78	TRANSISTOR XN6401	
Q183	8-729-602-36	TRANSISTOR 2SA1602	
Q184	8-729-117-32	TRANSISTOR 2SC4177	
Q185	8-729-421-23	TRANSISTOR XN1216	
Q186	8-729-602-36	TRANSISTOR 2SA1602TP	
Q187	8-729-602-36	TRANSISTOR 2SA1602	
Q188	8-729-117-32	TRANSISTOR 2SC4177	
Q189	8-729-602-36	TRANSISTOR 2SA1602	
Q190	8-729-117-32	TRANSISTOR 2SC4177	
Q191	8-729-402-78	TRANSISTOR XN6401	
Q192	8-729-402-78	TRANSISTOR XN6401	
Q193	8-729-402-78	TRANSISTOR XN6401	
Q194	8-729-602-36	TRANSISTOR 2SA1602	
Q195	8-729-602-36	TRANSISTOR 2SA1602	
Q196	8-729-117-32	TRANSISTOR 2SC4177	
Q255	8-729-907-47	TRANSISTOR IMZ1T108	
Q256	8-729-905-18	TRANSISTOR DTC144EU	
Q257	8-729-907-47	TRANSISTOR IMZ1T108	
Q302	8-729-602-36	TRANSISTOR 2SA1602	
Q303	8-729-602-36	TRANSISTOR 2SA1602	
Q304	8-729-117-32	TRANSISTOR 2SC4177	
Q305	8-729-117-32	TRANSISTOR 2SC4177	
Q307	8-729-402-81	TRANSISTOR XN4501	
Q309	8-729-602-36	TRANSISTOR 2SA1602	
Q312	8-729-117-32	TRANSISTOR 2SC4177	
Q361	8-729-403-07	TRANSISTOR XN1213	
Q362	8-729-403-10	TRANSISTOR XN6215	
Q363	8-729-117-32	TRANSISTOR 2SC4177	
Q364	8-729-403-10	TRANSISTOR XN6215	
Q365	8-729-402-78	TRANSISTOR XN6401	
Q367	8-729-117-32	TRANSISTOR 2SC4177	
Q368	8-729-403-10	TRANSISTOR XN6215	
Q501	8-729-117-32	TRANSISTOR 2SC4177	
Q502	8-729-117-32	TRANSISTOR 2SC4177	
Q503	8-729-602-36	TRANSISTOR 2SA1602	
Q504	8-729-117-32	TRANSISTOR 2SC4177	
Q505	8-729-102-07	TRANSISTOR 2SC2223-F13	
Q508	8-729-117-32	TRANSISTOR 2SC4177	
Q509	8-729-602-36	TRANSISTOR 2SA1602	
Q561	8-729-602-36	TRANSISTOR 2SA1602	
Q563	8-729-905-18	TRANSISTOR DTC144EU	
Q564	8-729-921-08	TRANSISTOR DTC144TU	
Q565	8-729-402-78	TRANSISTOR XN6401	
Q566	8-729-402-19	TRANSISTOR XN6501	
Q567	8-729-402-78	TRANSISTOR XN6401	
Q568	8-729-109-44	TRANSISTOR 2SK94	
Q569	8-729-602-36	TRANSISTOR 2SA1602	
Q570	8-729-905-15	TRANSISTOR DTC144WU	
Q571	8-729-920-39	TRANSISTOR IMT1US	
Q572	8-729-805-25	TRANSISTOR 2SB1121	
Q573	8-729-905-18	TRANSISTOR DTC144EU	

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark
Q610	8-729-403-10	TRANSISTOR XN6215	
Q612	8-729-921-08	TRANSISTOR DTC144TU	
Q613	8-729-117-32	TRANSISTOR 2SC4177	
Q614	8-729-117-32	TRANSISTOR 2SC4177	
Q619	8-729-117-32	TRANSISTOR 2SC4177	
Q620	8-729-117-32	TRANSISTOR 2SC4177	
Q621	8-729-402-19	TRANSISTOR XN6501	

RESISTOR

Ref.No.	Part No.	Description	Remark
R102	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R103	1-216-823-11	METAL GLAZE 1.5K 5% 1/16W	
R104	1-216-835-11	METAL GLAZE 15K 5% 1/16W	
R105	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R107	1-216-820-11	METAL GLAZE 820 5% 1/16W	
R108	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R109	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R111	1-216-822-11	METAL GLAZE 1.2K 5% 1/16W	
R112	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R116	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R117	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R118	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R123	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R128	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R129	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R132	1-216-844-11	METAL GLAZE 82K 5% 1/16W	
R133	1-216-844-11	METAL GLAZE 82K 5% 1/16W	
R134	1-216-850-11	METAL GLAZE 270K 5% 1/16W	
R135	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R136	1-216-835-11	METAL GLAZE 15K 5% 1/16W	
R137	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R138	1-216-843-11	METAL GLAZE 68K 5% 1/16W	
R141	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R142	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R143	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R144	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R147	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R148	1-216-809-11	METAL GLAZE 100 5% 1/16W	
R149	1-216-843-11	METAL GLAZE 68K 5% 1/16W	
R150	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R151	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R152	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R153	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R154	1-216-809-11	METAL GLAZE 100 5% 1/16W	
R155	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R156	1-216-823-11	METAL GLAZE 1.5K 5% 1/16W	
R157	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R158	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R162	1-216-812-11	METAL GLAZE 180 5% 1/16W	
R163	1-216-811-11	METAL GLAZE 150 5% 1/16W	

Ref.No.	Part No.	Description	Remark
R165	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R166	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R168	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R170	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R171	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R172	1-216-813-11	METAL GLAZE 220 5% 1/16W	
R173	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R174	1-216-296-00	METAL GLAZE 0 5% 1/8W	
R175	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R177	1-216-842-11	METAL GLAZE 56K 5% 1/16W	
R178	1-216-835-11	METAL GLAZE 15K 5% 1/16W	
R181	1-216-072-00	METAL GLAZE 9.1K 5% 1/10W	
R182	1-216-822-11	METAL GLAZE 1.2K 5% 1/16W	
R183	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R184	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R185	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R186	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R187	1-216-824-11	METAL GLAZE 1.8K 5% 1/16W	
R188	1-216-812-11	METAL GLAZE 180 5% 1/16W	
R189	1-216-820-11	METAL GLAZE 820 5% 1/16W	
R190	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R193	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R194	1-216-820-11	METAL GLAZE 820 5% 1/16W	
R195	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R196	1-216-840-11	METAL GLAZE 39K 5% 1/16W	
R197	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R199	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R200	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R201	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R202	1-216-823-11	METAL GLAZE 1.5K 5% 1/16W	
R203	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R204	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R205	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R206	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R207	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R208	1-216-842-11	METAL GLAZE 56K 5% 1/16W	
R209	1-216-840-11	METAL GLAZE 39K 5% 1/16W	
R210	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R211	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R212	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R213	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R214	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R215	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R217	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R218	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R219	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R220	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R221	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R222	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R223	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R224	1-216-833-11	METAL GLAZE 10K 5% 1/16W	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
R225	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R226	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R229	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R231	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R233	1-216-823-11	METAL GLAZE 1.5K 5% 1/16W	
R234	1-216-842-11	METAL GLAZE 56K 5% 1/16W	
R235	1-216-671-11	METAL CHIP 6.8K 0.50% 1/10W	
R236	1-216-673-11	METAL CHIP 8.2K 0.50% 1/10W	
R237	1-216-683-11	METAL CHIP 22K 0.50% 1/10W	
R238	1-216-671-11	METAL CHIP 6.8K 0.50% 1/10W	
R239	1-216-659-11	METAL CHIP 2.2K 0.50% 1/10W	
R240	1-216-681-11	METAL CHIP 18K 0.50% 1/10W	
R241	1-216-842-11	METAL GLAZE 56K 5% 1/16W	
R242	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R243	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R244	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R245	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R246	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R267	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R268	1-216-818-11	METAL GLAZE 560 5% 1/16W	
R269	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R270	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R272	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R273	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R274	1-216-818-11	METAL GLAZE 560 5% 1/16W	
R275	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R276	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R277	1-216-834-11	METAL GLAZE 12K 5% 1/16W	
R278	1-216-843-11	METAL GLAZE 68K 5% 1/16W	
R295	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R296	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R301	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R302	1-216-822-11	METAL GLAZE 1.2K 5% 1/16W	
R303	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R304	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R305	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R307	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R310	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R311	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R314	1-216-816-11	METAL GLAZE 390 5% 1/16W	
R315	1-216-823-11	METAL GLAZE 1.5K 5% 1/16W	
R316	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R318	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R319	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R320	1-216-839-11	METAL GLAZE 33K 5% 1/16W	
R322	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R323	1-216-830-11	METAL GLAZE 5.6K 5% 1/16W	
R327	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R328	1-216-817-11	METAL GLAZE 470 5% 1/16W	
R329	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R330	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	

Ref.No.	Part No.	Description	Remark
R331	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R332	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R337	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R338	1-216-838-11	METAL GLAZE 27K 5% 1/16W	
R339	1-216-831-11	METAL GLAZE 6.8K 5% 1/16W	
R340	1-216-296-00	METAL GLAZE 0 5% 1/8W	
R341	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R342	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R347	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R348	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R349	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R350	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R352	1-216-835-11	METAL GLAZE 15K 5% 1/16W	
R353	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R355	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R361	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R362	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R364	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R365	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R366	1-216-857-11	METAL GLAZE 1M 5% 1/16W	
R367	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R368	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R369	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R370	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R371	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R372	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R373	1-216-823-11	METAL GLAZE 1.5K 5% 1/16W	
R374	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R375	1-216-840-11	METAL GLAZE 39K 5% 1/16W	
R376	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R377	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R378	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R382	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R383	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R384	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R385	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R397	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R398	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R401	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R402	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R403	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R404	1-216-849-11	METAL GLAZE 220K 5% 1/16W	
R405	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R406	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R407	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R408	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R409	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R410	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R412	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R413	1-216-813-11	METAL GLAZE 220 5% 1/16W	
R414	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description				Remark
R415	1-216-813-11	METAL GLAZE	220	5%	1/16W	
R417	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R418	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R422	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R424	1-216-832-11	METAL GLAZE	8.2K	5%	1/16W	
R425	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R426	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R427	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R428	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R429	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R430	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R441	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R442	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R443	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R503	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R505	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R506	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R507	1-216-837-11	METAL GLAZE	22K	5%	1/16W	
R508	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R509	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R510	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R511	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R512	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R513	1-216-842-11	METAL GLAZE	56K	5%	1/16W	
R514	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R515	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R516	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R517	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R518	1-216-677-11	METAL CHIP	12K	0.50%	1/10W	
R519	1-216-671-11	METAL CHIP	6.8K	0.50%	1/10W	
R520	1-216-679-11	METAL CHIP	15K	0.50%	1/10W	
R521	1-216-679-11	METAL CHIP	15K	0.50%	1/10W	
R522	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R523	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R524	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R525	1-216-853-11	METAL GLAZE	470K	5%	1/16W	
R526	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R527	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R528	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R529	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R530	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R531	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R532	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R533	1-216-835-11	METAL GLAZE	15K	5%	1/16W	
R534	1-216-817-11	METAL GLAZE	470	5%	1/16W	
R535	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R541	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R543	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R547	1-216-823-11	METAL GLAZE	1.5K	5%	1/16W	
R548	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R549	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R550	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R551	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R552	1-216-826-11	METAL GLAZE	2.7K	5%	1/16W	
R560	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R561	1-216-849-11	METAL GLAZE	220K	5%	1/16W	
R562	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R563	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R564	1-216-851-11	METAL GLAZE	330K	5%	1/16W	
R565	1-216-841-11	METAL GLAZE	47K	5%	1/16W	
R566	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R567	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R568	1-216-097-00	METAL GLAZE	100K	1%	1/10W	
R569	1-216-852-11	METAL GLAZE	390K	5%	1/16W	
R570	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R571	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R572	1-216-845-11	METAL GLAZE	100K	5%	1/16W	
R573	1-216-851-11	METAL GLAZE	330K	5%	1/16W	
R574	⚠1-216-809-11	METAL GLAZE	100	5%	1/16W	
R575	1-216-861-11	METAL GLAZE	2.2M	5%	1/16W	
R576	1-216-839-11	METAL GLAZE	33K	5%	1/16W	
R577	1-216-843-11	METAL GLAZE	68K	5%	1/16W	
R578	1-216-136-00	METAL GLAZE	2.7	5%	1/8W	
R579	1-216-828-11	METAL GLAZE	3.9K	5%	1/16W	
R580	1-216-822-11	METAL GLAZE	1.2K	5%	1/16W	
R581	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R582	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R583	1-218-172-11	METAL GLAZE	680K	1%	1/10W	
R584	1-218-172-11	METAL GLAZE	680K	1%	1/10W	
R585	1-216-836-11	METAL GLAZE	18K	5%	1/16W	
R587	1-216-807-11	METAL GLAZE	68	5%	1/16W	
R589	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R611	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R617	1-216-864-11	METAL GLAZE	0	5%	1/16W	
R618	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R619	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R620	1-216-833-11	METAL GLAZE	10K	5%	1/16W	
R621	1-216-857-11	METAL GLAZE	1M	5%	1/16W	
R623	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R624	1-216-829-11	METAL GLAZE	4.7K	5%	1/16W	
R631	1-216-844-11	METAL GLAZE	82K	5%	1/16W	
R632	1-216-819-11	METAL GLAZE	680	5%	1/16W	
R633	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R634	1-216-821-11	METAL GLAZE	1K	5%	1/16W	
R635	1-216-854-11	METAL GLAZE	560K	5%	1/16W	
R636	1-216-825-11	METAL GLAZE	2.2K	5%	1/16W	
R637	1-216-820-11	METAL GLAZE	820	5%	1/16W	
R638	1-216-831-11	METAL GLAZE	6.8K	5%	1/16W	
R639	1-216-830-11	METAL GLAZE	5.6K	5%	1/16W	
R640	1-216-827-11	METAL GLAZE	3.3K	5%	1/16W	
R641	1-216-818-11	METAL GLAZE	560	5%	1/16W	
R642	1-216-833-11	METAL GLAZE	10K	5%	1/16W	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
R643	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R644	1-216-824-11	METAL GLAZE 1.8K 5% 1/16W	
R645	1-216-830-11	METAL GLAZE 5.6K 5% 1/16W	
R646	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R647	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R649	1-216-685-11	METAL CHIP 27K 0.50% 1/10W	
R650	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R651	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R653	1-216-847-11	METAL GLAZE 150K 5% 1/16W	
R654	1-216-864-11	METAL GLAZE 0 5% 1/16W	
R656	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R657	1-216-818-11	METAL GLAZE 560 5% 1/16W	
R659	1-216-844-11	METAL GLAZE 82K 5% 1/16W	
R661	1-216-813-11	METAL GLAZE 220 5% 1/16W	
R662	1-216-813-11	METAL GLAZE 220 5% 1/16W	
R663	1-216-813-11	METAL GLAZE 220 5% 1/16W	
R664	1-216-827-11	METAL GLAZE 3.3K 5% 1/16W	
R665	1-216-830-11	METAL GLAZE 5.6K 5% 1/16W	

NETWORK RESISTOR

Ref.No.	Part No.	Description	Remark
RB101	1-236-424-11	NETWORK, RES 10K	
RB141	1-236-416-11	NETWORK, RES 2.2K	
RB181	1-236-414-11	NETWORK, RES 1.5K	
RB182	1-236-412-11	NETWORK, RES 1.0K	
RB183	1-236-420-11	NETWORK, RES 4.7K	
RB184	1-236-420-11	NETWORK, RES 4.7K	
RB252	1-236-409-11	NETWORK, RES 560	
RB253	1-236-409-11	NETWORK, RES 560	
RB301	1-236-412-11	NETWORK, RES 1.0K	
RB362	1-236-436-11	NETWORK, RES 100K	
RB363	1-236-424-11	NETWORK, RES 10K	
RB561	1-236-436-11	NETWORK, RES 100K	
RB562	1-236-436-11	NETWORK, RES 100K	
RB563	1-236-412-11	NETWORK, RES 1.0K	
RB564	1-236-436-11	NETWORK, RES 100K	
RB565	1-236-436-11	NETWORK, RES 100K	
RB566	1-236-436-11	NETWORK, RES 100K	
RB567	1-236-412-11	NETWORK, RES 1.0K	
RB569	1-236-412-11	NETWORK, RES 1.0K	
RB570	1-236-432-11	NETWORK, RES 47K	
RB574	1-236-436-11	NETWORK, RES 100K	
RB575	1-236-436-11	NETWORK, RES 100K	
RB576	1-236-424-11	NETWORK, RES 10K	
RB577	1-236-424-11	NETWORK, RES 10K	
RB611	1-236-424-11	NETWORK, RES 10K	
RB613	1-236-436-11	NETWORK, RES 100K	
RB614	1-236-436-11	NETWORK, RES 100K	

VARIABLE RESISTOR

Ref.No.	Part No.	Description	Remark
RV501	1-238-089-11	RES, ADJ, CERMET 4.7K	
RV502	1-238-089-11	RES, ADJ, CERMET 4.7K	
RV503	1-238-088-11	RES, ADJ, CERMET 2.2K	
RV504	1-238-087-11	RES, ADJ, CERMET 1K	
RV505	1-238-087-11	RES, ADJ, CERMET 1K	
RV561	1-238-093-11	RES, ADJ, CERMET 100K	

CONNECTOR

Ref.No.	Part No.	Description	Remark
W303	1-568-326-11	CONNECTOR, BOARD TO BOARD 7P	
W801	1-568-327-11	CONNECTOR, BOARD TO BOARD 8P	

CRYSTAL

Ref.No.	Part No.	Description	Remark
X101	1-577-119-11	OSCILLATOR, CRYSTAL (28.375MHz)	
X141	1-567-733-11	VIBRATOR, CRYSTAL (17MHz)	
X361	1-577-118-11	VIBRATOR, LITHIUM NIOBATE	
X561	1-579-049-21	VIBRATOR, CRYSTAL (32.768KHz)	

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*A-7062-392-A TI-31 BOARD, COMPLETE (Ref.No.4,000
********************* series)

CAPACITOR

Ref.No.	Part No.	Description	Remark
C801	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C802	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C803	1-162-637-11	CERAMIC CHIP 0.47MF 16V	
C804	1-162-907-11	CERAMIC CHIP 2PF 0.25PF 50V	
C805	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C807	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C808	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C810	1-135-157-21	TANTAL. CHIP 10MF 20% 6.3V	
C811	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C812	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C813	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C814	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C815	1-162-949-11	CERAMIC CHIP 47PF 5% 50V	
C816	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C817	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
C819	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	

CONNECTOR

Ref.No.	Part No.	Description	Remark
CN801	1-568-359-11	CONNECTOR, BOARD TO BOARD 20P	

TRIMMER

Ref.No.	Part No.	Description	Remark
CT801	1-141-368-11	CAP, CHIP TRIMMER (30PF)	

When indicating parts by reference number, please include the board name.

TI-31 VF-40

Ref.No.	Part No.	Description	Remark
CT802	1-141-368-11	CAP, CHIP TRIMMER (30PF)	

DIODE

Ref.No.	Part No.	Description	Remark
D801	8-713-300-88	DIODE 1T33C-01	

IC

Ref.No.	Part No.	Description	Remark
IC801	8-759-979-96	IC MB8464A-15LLPF	
IC802	8-759-150-75	IC UPD6145G-621	
IC803	8-759-971-81	IC MB670479U	

COIL

Ref.No.	Part No.	Description	Remark
L801	1-410-377-31	INDUCTOR CHIP 4.7UH	
L802	1-410-384-31	INDUCTOR CHIP 18UH	
L803	1-410-390-11	INDUCTOR CHIP 56UH	
L804	1-410-381-11	INDUCTOR CHIP 10UH	
L805	1-410-381-11	INDUCTOR CHIP 10UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q801	8-729-905-18	TRANSISTOR DTC144EU	
Q802	8-729-403-24	TRANSISTOR XN4210	

RESISTOR

Ref.No.	Part No.	Description	Remark
R801	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R802	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R804	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R805	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R806	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R809	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R811	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R815	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R816	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R818	1-216-837-11	METAL GLAZE 22K 5% 1/16W	
R819	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R820	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R821	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R822	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R823	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R826	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R827	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R828	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R829	1-216-825-11	METAL GLAZE 2.2K 5% 1/16W	
R830	1-216-817-11	METAL GLAZE 470 5% 1/16W	
R831	1-216-817-11	METAL GLAZE 470 5% 1/16W	
R832	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R833	1-216-864-11	METAL GLAZE 0 5% 1/16W	

NETWORK RESISTOR

Ref.No.	Part No.	Description	Remark
RB801	1-236-424-11	NETWORK, RES 10K	
RB802	1-236-424-11	NETWORK, RES 10K	
RB804	1-236-424-11	NETWORK, RES 10K	

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Ref.No.	Part No.	Description	Remark
	*A-7062-393-A *********************	VF-40 BOARD, COMPLETE (Ref.No.9,000 series)	
	*3-747-126-01	HOLDER, LED	

CAPACITOR

Ref.No.	Part No.	Description	Remark
C951	1-124-442-00	ELECT 330MF 20% 6.3V	
C953	1-163-077-00	CERAMIC CHIP 0.1MF 50V	
C954	1-135-091-00	TANTAL. CHIP 1MF 20% 16V	
C955	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C956	1-131-381-00	TANTALUM 47MF 10% 6.3V	
C957	1-163-081-00	CERAMIC CHIP 0.22MF 25V	
C958	1-136-718-11	FILM CHIP 0.1MF 5% 25V	
C959	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
C960	1-127-515-11	ELECT(SOLID) 47MF 20% 6.3V	
C961	⚠1-163-205-00	CERAMIC CHIP 0.001MF 10% 50V	
C962	⚠1-163-209-00	CERAMIC CHIP 0.0015MF 5% 50V	
C963	⚠1-162-625-11	CERAMIC CHIP 0.0047MF 5% 50V	
C965	1-126-090-11	ELECT 82MF 20% 10V	
C966	1-124-257-00	ELECT 2.2MF 20% 35V	
C968	1-163-037-11	CERAMIC CHIP 0.022MF 10% 25V	
C969	1-164-611-11	CERAMIC CHIP 0.001MF 10% 500V	

CONNECTOR

Ref.No.	Part No.	Description	Remark
CN951	*1-566-759-11	PIN, CONNECTOR (PC BOARD) 4P	
CN952	*1-566-195-11	PIN, CONNECTOR (PC BOARD) 2P	
CN953	*1-566-195-21	PIN, CONNECTOR (PC BOARD) 2P	

DIODE

Ref.No.	Part No.	Description	Remark
D951	8-719-820-65	DIODE TLS221	
D952	8-719-800-60	DIODE TLR214	
D953	8-719-400-20	DIODE MA152WA	

IC

Ref.No.	Part No.	Description	Remark
IC951	8-759-420-01	IC AN2512S	

COIL

Ref.No.	Part No.	Description	Remark
L951	1-408-976-21	INDUCTOR 33UH	
L952	1-408-785-21	INDUCTOR CHIP 47UH	
L953	⚠1-459-876-41	COIL, FERRITE (HLC)	

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
		TRANSISTOR	
Q953	8-729-216-31	TRANSISTOR 2SA1163G	
Q954	8-729-100-67	TRANSISTOR 2SC1623-L7	
Q955	8-729-106-68	TRANSISTOR 2SD1615A-GP	
		RESISTOR	
R953	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R955	1-216-001-00	METAL GLAZE 10 5% 1/10W	
R956	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R957	1-216-031-00	METAL GLAZE 180 5% 1/10W	
R958	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
R959	1-216-113-00	METAL GLAZE 470K 5% 1/10W	
R960	1-216-053-00	METAL GLAZE 1.5K 5% 1/10W	
R961	1-216-160-00	METAL GLAZE 27 5% 1/8W	
R962	1-216-336-11	METAL GLAZE 47K 1% 1/10W	
R963	1-216-107-00	METAL GLAZE 270K 5% 1/10W	
R964	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R965	1-216-308-00	METAL GLAZE 4.7 5% 1/10W	
R967	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R968	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R969	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R970	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R972	1-216-101-00	METAL GLAZE 150K 5% 1/10W	
R973	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R974	1-216-131-11	METAL GLAZE 2.7M 5% 1/10W	
R975	1-216-131-11	METAL GLAZE 2.7M 5% 1/10W	
R976	1-216-055-00	METAL GLAZE 1.8K 5% 1/10W	
R978	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R983	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
		VARIABLE RESISTOR	
RV951	1-238-092-11	RES, ADJ, CERMET 47K	
RV952	1-238-086-11	RES, ADJ, CERMET 470	
RV953	1-238-088-11	RES, ADJ, CERMET 2.2K	
RV954	1-228-762-00	RES, ADJ, METAL GLAZE 1M	
		TRANSFORMER	
T951	⚠1-439-486-11	TRANSFORMER ASSY, FLYBACK	
		THERMISTOR	
TH951	1-807-938-11	THERMISTOR	
		SOCKET	
W951	⚠1-540-019-21	SOCKET ASSY, CRT	

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Ref.No.	Part No.	Description	Remark
	*1-635-755-21	CD-48 BOARD (Ref.No.1,000 series) ***********	
		CAPACITOR	
C901	1-163-009-11	CERAMIC CHIP 0.001MF 10% 50V	
C902	1-135-155-21	TANTAL. CHIP 4.7MF 20% 16V	
C903	1-135-159-21	TANTAL. CHIP 10MF 20% 20V	
C904	1-162-970-11	CERAMIC CHIP 0.01MF 10% 25V	
C905	1-135-162-21	TANTAL. CHIP 33MF 20% 6.3V	
C906	1-135-148-21	TANTAL. CHIP 1.5MF 20% 16V	
		COIL	
L901	1-412-032-11	INDUCTOR CHIP 100UH	
		TRANSISTOR	
Q901	8-765-420-02	TRANSISTOR 2SK300-3	
		RESISTOR	
R901	1-216-809-11	METAL GLAZE 100 5% 1/16W	
R902	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R903	1-216-841-11	METAL GLAZE 47K 5% 1/16W	
R904	1-216-835-11	METAL GLAZE 15K 5% 1/16W	
R905	1-216-822-11	METAL GLAZE 1.2K 5% 1/16W	
		FLEXIBLE BOARD	
W901	1-635-761-11	PC BOARD, FP-333	

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Ref.No.	Part No.	Description	Remark
	*1-635-762-21	SW-161 BOARD (Ref.No.8,000 series) ************	
		CONNECTOR	
CN756	1-565-874-11	PIN, CONNECTOR (PC BOARD) 2P	
		SWITCH	
S762	1-571-684-11	SWITCH, TACTIL (BACK LIGHT)	

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The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

EL-11 MA-73

Ref.No.	Part No.	Description	Remark
	*A-7071-259-A	EL-11 BOARD, COMPLETE (Ref.No.6,000 ********************** series)	
	3-747-701-01	PLATE, GROUND, EL	

CAPACITOR

Ref.No.	Part No.	Description	Remark
C942	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C943	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	

CONNECTOR

Ref.No.	Part No.	Description	Remark
CN942	*1-565-875-11	PIN, CONNECTOR (PC BOARD) 3P	

DIODE

Ref.No.	Part No.	Description	Remark
D941	8-719-420-15	DIODE MA8082-M(TX)	
D942	8-719-106-71	DIODE RD12M-B2	
D943	8-719-404-46	DIODE MA110	

JACK

Ref.No.	Part No.	Description	Remark
J902	1-565-276-11	JACK, ULTRA SMALL 1P (REMOTE)	

COIL

Ref.No.	Part No.	Description	Remark
L941	1-410-369-11	INDUCTOR CHIP 1UH	
L942	1-410-369-11	INDUCTOR CHIP 1UH	
L943	1-410-369-11	INDUCTOR CHIP 1UH	

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Ref.No.	Part No.	Description	Remark
	*A-7071-260-A	MA-73 BOARD, COMPLETE (Ref.No.7,000 ********************** series)	

CAPACITOR

Ref.No.	Part No.	Description	Remark
C401	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C402	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C403	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C404	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C406	1-162-587-11	CERAMIC CHIP 0.039MF 10% 25V	
C407	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C408	1-164-156-11	CERAMIC CHIP 0.1MF 25V	
C409	1-124-967-11	ELECT 10MF 20% 10V	
C410	1-162-953-11	CERAMIC CHIP 100PF 5% 50V	
C411	1-135-181-21	TANTAL. CHIP 4.7MF 20% 6.3V	
C412	1-135-181-21	TANTAL. CHIP 4.7MF 20% 6.3V	
C413	1-126-205-11	ELECT CHIP 47MF 20% 6.3V	
C414	1-162-964-11	CERAMIC CHIP 0.001MF 10% 50V	
C415	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C416	1-162-941-11	CERAMIC CHIP 10PF 0.5PF 50V	
C418	1-163-022-00	CERAMIC CHIP 0.012MF 10% 50V	
C419	1-163-022-00	CERAMIC CHIP 0.012MF 10% 50V	
C420	1-163-022-00	CERAMIC CHIP 0.012MF 10% 50V	
C481	1-163-022-00	CERAMIC CHIP 0.012MF 10% 50V	

CONNECTOR

Ref.No.	Part No.	Description	Remark
CN404	*1-565-543-11	PIN, CONNECTOR (PC BOARD) 4P	
CN405	*1-566-758-11	PIN, CONNECTOR (PC BOARD) 3P	

DIODE

Ref.No.	Part No.	Description	Remark
D401	8-719-420-15	DIODE MA8082-M(TX)	

JACK

Ref.No.	Part No.	Description	Remark
J904	1-568-027-11	JACK, SMALL TYPE 1P (MIC PLUG IN POWER)	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q401	8-729-905-23	TRANSISTOR 2SA1576R	
Q402	8-729-117-32	TRANSISTOR 2SC4177	
Q403	8-729-905-35	TRANSISTOR 2SC4081R	
Q404	8-729-117-32	TRANSISTOR 2SC4177	
Q405	8-729-117-32	TRANSISTOR 2SC4177	
Q481	8-729-905-35	TRANSISTOR 2SC4081T106R	

RESISTOR

Ref.No.	Part No.	Description	Remark
R401	1-216-823-11	METAL GLAZE 1.5K 5% 1/16W	
R402	1-216-834-11	METAL GLAZE 12K 5% 1/16W	
R403	1-216-844-11	METAL GLAZE 82K 5% 1/16W	
R404	1-216-845-11	METAL GLAZE 100K 5% 1/16W	
R405	1-216-832-11	METAL GLAZE 8.2K 5% 1/16W	
R406	1-216-831-11	METAL GLAZE 6.8K 5% 1/16W	
R407	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R408	1-216-831-11	METAL GLAZE 6.8K 5% 1/16W	
R409	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R410	1-216-810-11	METAL GLAZE 120 5% 1/16W	
R411	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	
R412	1-216-836-11	METAL GLAZE 18K 5% 1/16W	
R413	1-216-821-11	METAL GLAZE 1K 5% 1/16W	
R414	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R415	1-216-833-11	METAL GLAZE 10K 5% 1/16W	
R416	1-216-816-11	METAL GLAZE 390 5% 1/16W	
R417	1-216-828-11	METAL GLAZE 3.9K 5% 1/16W	
R418	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R419	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R420	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R481	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
R482	1-216-829-11	METAL GLAZE 4.7K 5% 1/16W	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
R483	1-216-811-11	METAL GLAZE 150 5% 1/16W	
R484	1-216-296-00	METAL GLAZE 0 5% 1/8W	

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MISCELLANEOUS
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Ref.No.	Part No.	Description	Remark
	⚠A-7062-288-A	DD-30 BOARD, COMPLETE (DC-DC CONVERTER UNIT)	
	1-466-382-21	SWITCH BLOCK, CONTROL (FK-0) (E, Australian MODEL)	
	1-466-383-11	SWITCH BLOCK, CONTROL (CF-0)	
	1-466-418-11	SWITCH BLOCK, CONTROL (FK-0) (AEP (BLACK), UK MODEL)	
	1-466-418-71	SWITCH BLOCK, CONTROL (FK-0) (AEP (WHITE), MODEL)	
	1-537-295-11	TERMINAL BOARD, LITHIUM	
	1-537-297-31	TERMINAL BOARD, BATTERY	
	1-542-126-11	MICROPHONE UNIT	
	1-547-408-11	FILTER, INFRARED CUT (IR-03)	
	1-547-427-11	LENS, ZOOM (VCL-706WB)	
	1-580-031-11	JACK ASSY, PIN	
	*1-627-721-16	PC BOARD, FP-114 FLEXIBLE	
	1-627-722-11	PC BOARD, FP-149 FLEXIBLE	
	3-708-041-01	F SENSOR ASSY (ENCODER)	
IC901	8-752-604-51	IC ICX045AK-1 (CCD IMAGER)	
M901	A-7048-214-A	DRUM BLOCK ASSY (DGH-37A-R) (DRUM)	
M902	8-835-329-01	MOTOR, DC U-21A (CAPSTAN)	
M903	1-541-607-11	MOTOR, DC (LA12G-344VA) (LOADING)	
M905	3-708-056-01	MOTOR ASSY, F (FOCUS)	
M906	3-708-055-01	MOTOR ASSY, PZ (ZOOM)	
PS901	⚠1-532-841-21	LINK, IC PRF1600 1.6A	
PS902	⚠1-532-841-21	LINK, IC PRF1600 1.6A	
PS903	⚠1-532-841-21	LINK, IC PRF1600 1.6A	
V901	⚠1-452-565-11	CRT ASSY (M01KKD70WB)	

****

ACCESSORIES AND PACKING MATERIALS
****

Part No.	Description	Remark
3-752-033-21	HANDY MANUAL, INSTRUCTION (ENGLISH)	
3-752-033-51	HANDY MANUAL, INSTRUCTION (AEP MODEL) (FRENCH, GERMAN, SPANISH)	
3-752-033-61	HANDY MANUAL, KINSTRUCTION (AEP MODEL) (DUTCH, SWEDISH, ITALIAN)	
3-752-033-71	HANDY MANUAL, INSTRUCTION (E MODEL) (ARABIC)	
3-752-034-41	MANUAL, INSTRUCTION (AEP, UK MODEL) (ENGLISH)	
3-752-034-51	MANUAL, INSTRUCTION (AEP MODELO (FRENCH, GERMAN, SPANISH)	
3-752-034-61	MANUAL, INSTRUCTION (AEP MODEL) (DUTCH, SWEDISH, ITALIAN)	
3-752-034-71	MANUAL, INSTRUCTION (AEP MODEL) (PORTUGUESE)	
3-752-412-11	MANUAL, INSTRUCTION (E, Australian MODEL) (ENGLISH)	
3-752-412-41	MANUAL, INSTRUCTION (E MODEL) (FRENCH, GERMAN, SPANISH)	
3-752-412-51	MANUAL, INSTRUCTION (E MODEL) (ARABIC)	
3-752-412-81	MANUAL, INSTRUCTION (E MODEL) (CHINESE)	
*3-704-281-01	BAG, PROTECTION (STANDARD)	
3-704-480-01	SHEET (D), BLIND (AEP MODEL)	
3-707-568-01	ADAPTOR, LENS HOOD	
*3-747-754-01	CUSHION (UPPER)	
*3-747-755-01	CUSHION (LOWER)	
*3-764-631-12	INSTRUCTION, DEW CONDENSATION	

**** ACCESSORIES AND PACKING MATERIALS (KIT) ****

Part No.	Description	Remark
A-6767-706-A	RFU ADAPTOR (RFU-89EA) (E MODEL)	
A-6767-707-A	RFU ADAPTOR (RFU-89EA) (UK MODEL)	
A-6767-772-A	RFU ADAPTOR (RFU-90AS) (Australian MODEL)	
A-6768-254-A	RFU ADAPTOR (RFU-90E) (AEP MODEL)	
1-571-164-11	SWITCH, ANTENNA CHANGE (CABLE) (UK, E, Australian MODEL)	
3-712-673-01	SCREWDRIVER (UK, E MODEL)	
*3-736-875-01	CUSHION (INNER), ACC	
*3-736-876-01	CUSHION (LOWER), ACC	
3-741-582-01	BELT, SHOULDER	
*3-749-232-21	INDIVIDUAL CARTON (BLACK)	
*3-749-232-91	INDIVIDUAL CARTON (WHITE)	
** AC-V30	AC POWER ADAPTOR	
*** NP-55	BATTERY PACK	

Note

** MARK PARTS IS AVAILABLE FOR REPAIR SERVICE.
*** MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

****

HARDWARE LIST
****

SCREW

Part No.	Description
7-621-255-50	SCREW +P 2X8
7-627-551-87	PRECISION SCREW +P 1.4X1.8
7-685-204-19	SCREW +KTP 2X6 TYPE2 NON-SLIT

STOP RING

Part No.	Description
7-624-102-04	STOP RING 1.5, TYPE -E

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 7

CAMERA ADJUSTMENTS

During the adjustment, see the arrangement diagram for adjustment parts from page 244.

7-1. PRE-ADJUSTMENT PREPARATIONS (CAMERA BLOCK)

7-1-1. List of Servicing Jigs

- Oscilloscope
- Adjusting screwdriver
- Regulated power supply (2 units)
- Color monitor
- Vectorscope
- Stop watch
- Digital voltmeter

Ref. No.	Part Name	Part No.	Use
J-1	Filter (C14) for color temperature correction	J-6080-058-A	Auto white balance adjustment/confirmation
J-2	ND filter 1.0	J-6080-808-A	Max. gain adjustment (two filters used)
	ND filter 0.4	J-6080-806-A	Iris adjustment, iris in/out adjustment (two used), Max. gain adjustment
	ND filter 0.1	J-6080-807-A	Iris adjustment, iris in/out adjustment
J-3	Pattern box PTB-450*		
J-4	Pattern box color chart	J-6020-250-A	
J-5	Siemens star	J-6080-875-A	For flange back adjustment
J-6	AF microprocessor data reading jig	J-6082-025-A	
J-7	Adjustment remote controller (RM-95 Modification)	J-6082-053-A	
J-8	Extension cord (16P)	J-6082-062-A	Extension for CF-0 (operation switch) block (during operation)
	Extension cord (14P)	J-6082-061-A	Extension cord for CD-48 board (when repairing VC-84 board)
	Extension cord (20P)	J-6082-063-B	Extension cord for LD-36 board (when repairing VC-84 board)
			Extension cord for TI-31 board (when repairing TI-31 board)
J-9	Extension cord (10P)	J-6082-064-A	Extension cord for video I/O terminal (when repairing VS-72 board)

*1 PTB-500 (J-6029-140-A) can also be used.

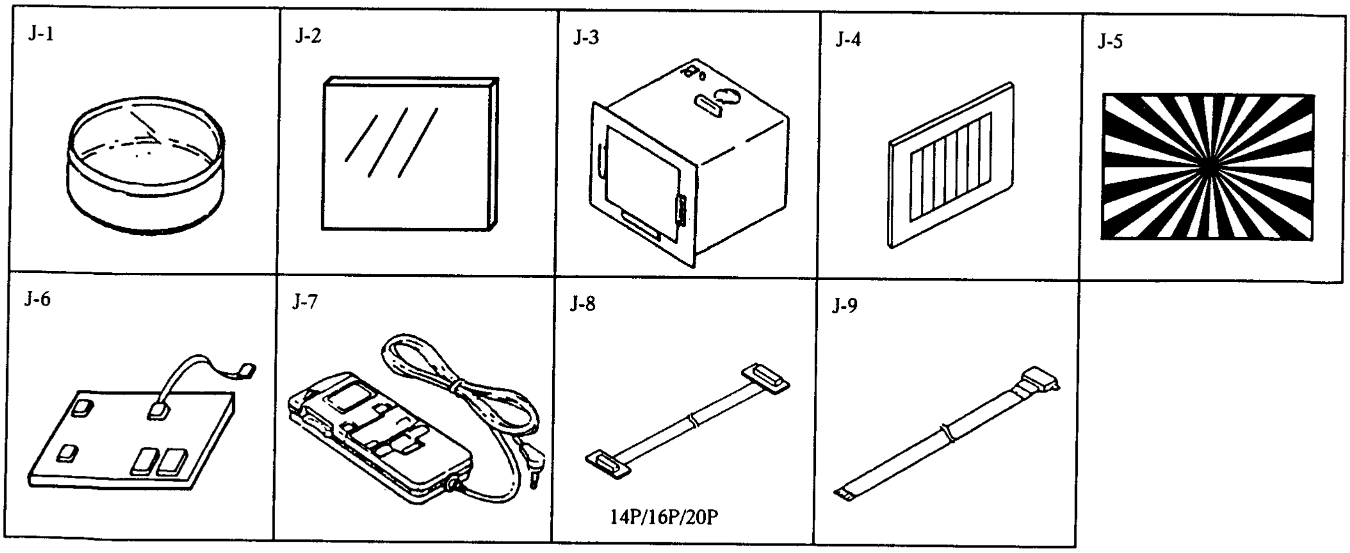


Fig. 7-1.

7-1-2. Preparations

Note: Refer to "2. DISASSEMBLY" for details on removal of the cabinet and various boards.

1) Connect the various devices for adjustment as shown in Fig. 7-3.
2) The EVF (electronic viewfinder) is needed for confirmation of the white balance mode and shutter speed. Remove CN205 on the VS-72 board when the EVF is not needed.
3) The mic amplifier (MA-73 board) is not needed. Remove CN402 on the AU-95 board.

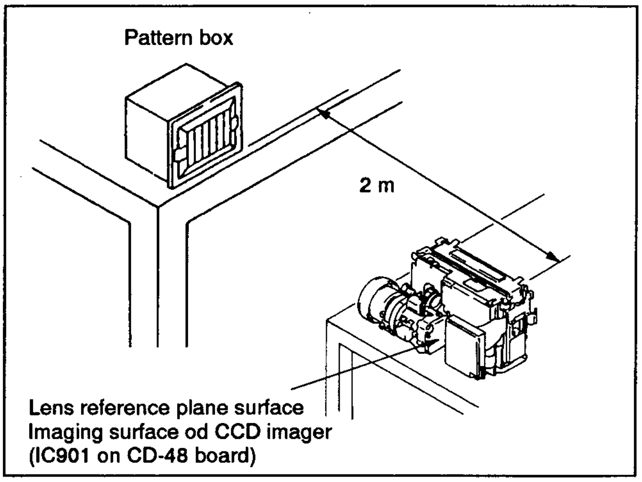
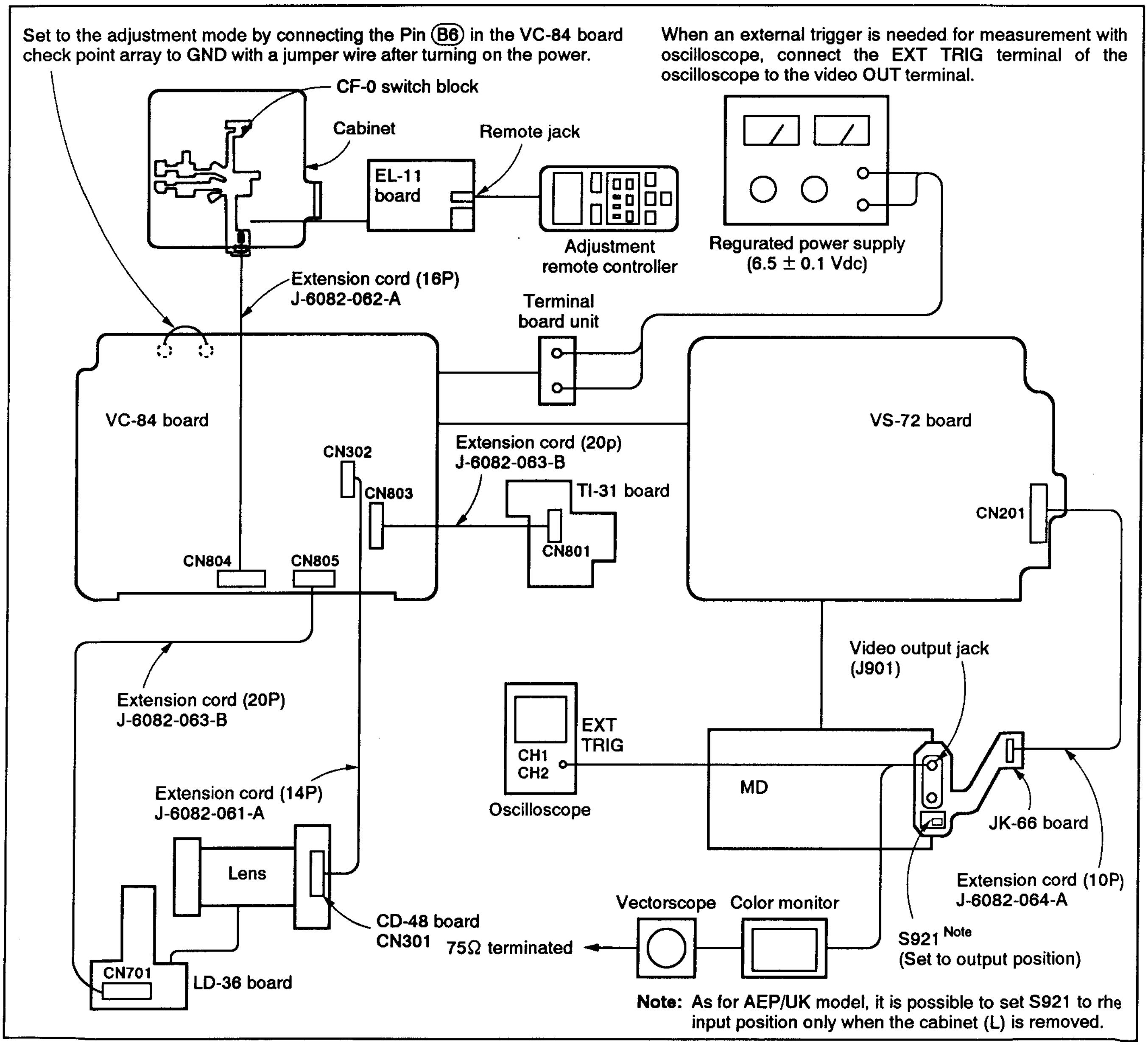

Pattern box
2 m
Lens reference plane surface
Imaging surface od CCD imager
(IC901 on CD-48 board)

Fig. 7-2.


Set to the adjustment mode by connecting the Pin (B6) in the VC-84 board check point array to GND with a jumper wire after turning on the power.

When an external trigger is needed for measurement with oscilloscope, connect the EXT TRIG terminal of the oscilloscope to the video OUT terminal.

CF-0 switch block
Cabinet
Remote jack
EL-11 board
Adjustment remote controller
Regurated power supply (6.5 ± 0.1 Vdc)
Extension cord (16P) J-6082-062-A
Terminal board unit
VC-84 board
VS-72 board
CN302
CN803
Extension cord (20p) J-6082-063-B
TI-31 board
CN801
CN201
CN804
CN805
Video output jack (J901)
Extension cord (20P) J-6082-063-B
EXT TRIG
CH1
CH2
Oscilloscope
MD
Extension cord (14P) J-6082-061-A
JK-66 board
Lens
Extension cord (10P) J-6082-064-A
CD-48 board CN301
75Ω terminated
Vectorscope
Color monitor
S921 Note (Set to output position)
CN701
LD-36 board

Note: As for AEP/UK model, it is possible to set S921 to rhe input position only when the cabinet (L) is removed.

Fig. 7-3.

7-1-3. Precautions

1. Setting of switches

Unless otherwise specified, the switches are set to the following positions and adjustment is made without a cassette inserted.

1. Camera/video power switch (S901 on FK-0 board) ......CAMERA
2. Standby switch (S909 on FK-0 board)......STANDBY
3. Input/output select switch (S921 on JK-66 board) ......OUTPUT

Note: As for AEP/UK model, S921 is forcibly fixed to output side by the output cover when the cabinet (L) has been installed.

4. Back-light correction button (S762 on SW-161 board) ......OFF
5. Shutter speed button (S758 on CF-0 board) ......NORMAL (1/50)

2. Adjustment order

As a rule, the adjustments are performed in the listed order.

3. Subjects

1) Color bar chart (standard picture frame)
   When performing adjustment using the color bar chart, adjust the picture frame shown in Fig. 7-4. (standard picture frame).
2) White pattern (standard picture frame)
   Remove the color bar chart from the pattern box and use the zoom button so that the white pattern has the same size and is in the same position as the color bar chart (standard picture frame).

Color bar chart standard picture frame

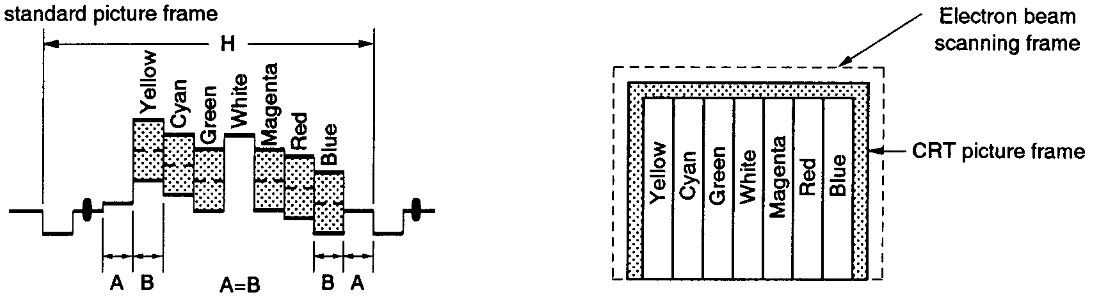


Fig. a (Video input/output terminal output waveform)

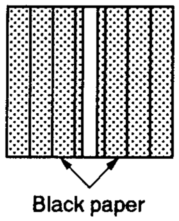
Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-4.

3) All white pattern
   Remove the color bar chart from the pattern box and set the zoom ring fully to the TELE side.
4) High luminance pattern
   Create the high luminance pattern as shown in Fig. 7-5., and adjust for the picture frame shown in Fig. 7-6.
5) Siemens star (J-6080-875-A)
   Adjust the direction of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.

High luminance pattern



Attach black paper over all sections of the pattern except for half of the white bar of the color bar chart. Display the picture on the monitor with the standard picture frame.

Fig. 7-5.

High luminance pattern

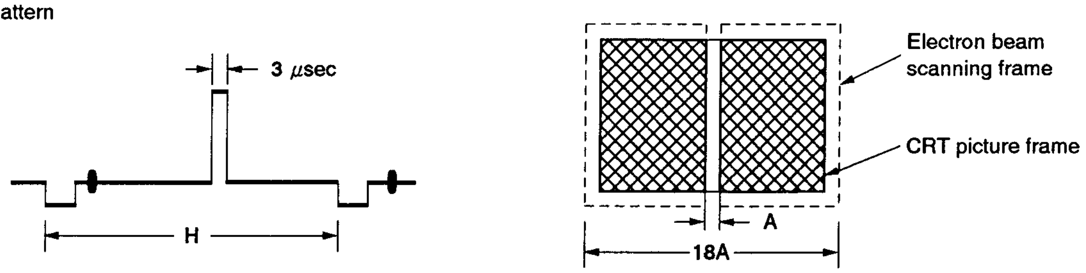


Fig. a (Video input/output terminal output waveform)

Fig. b (Picture on monitor TV)

Adjust the zooming and direction of the camera to obtain the output waveform shown in Fig. a and the monitor TV picture shown in Fig. b.

Fig. 7-6.

7-1-4. Adjustment Remote Controller

An EVR (electronic variable resistor) is used as the adjustment element for the camera block, replacing the conventional semi-fixed resistor. The EVR is controlled by the EVR/AWB microprocessor (IC361 on VC-84 board). This microprocessor reads the data written in the nonvolatile memory of the microprocessor and sends it to the EVR. The EVR D-A converts this data (8 bits for each adjustment point) and creates the adjustment voltage.

Thus, it is necessary to change the adjustment data contained in the nonvolatile memory when adjusting the camera block, and the adjustment memory is used for this purpose.

The adjustment remote controller performs bidirectional communications with the camera block microprocessor using the remote control signal lines (LANC). Adjustment addresses and adjustment data increment/decrement commands are sent to the camera block microprocessor from the adjustment remote controller. Adjustment addresses and adjustment data are sent from the camera block microprocessor to the adjustment remote controller.

1. Use of adjustment remote controller

Solder the lead wire to Pin (B6) (refer to 7-1-5.) of the check point array on the VC-84 board.

1) Connect the adjustment remote controller to the remote terminal (J902 on EL-11 board). (Set the HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).)
2) Turn on the power of the main unit.
3) Connect Pin (B6) ($\overline{\text{CAM ADJ}}$) of the check point array to GND using a jumper wire.

   (This connection causes the EVR/AWB microprocessor to cease normal remote control operation and to begin adjustment dedicated communications.)

   Note: Be sure to make this connection only after turning on the power. The following will be displayed on the LCD of the adjustment remote controller if the connection is normal. (Adjustment data varies according to the unit.)

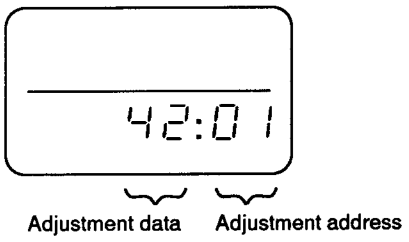


Fig. 7-7.

4) Designate the desired adjustment address using the adjustment remote controller. The adjustment address is incremented by pressing the FF (►►) button and decremented by pressing the REW (◄◄) button. (The adjustment address is indicated in hexadecimal, and there are 117 addresses from 01 to 75. The adjustment address corresponds to the EVR (IC252, IC302, IC611 on VC-84 board) output terminals. Refer to Table 7-3. for the adjustment contents of the various addresses.)

5) Perform adjustment by incrementing or decrementing the adjustment data.

   The adjustment data is incremented by pressing the PLAY (►) button. The adjustment data is decremented by pressing the STOP (■) button.

   - The adjustment data is indicated in hexadecimal. There are 256 values from 00 to FF.

Hexadecimal	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD Indication	0	1	2	3	4	5	6	7	8	9	A	b	c	d	E	F
Decimal equivalent	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Table 7-1.

   - The adjustment data corresponds to the EVR (IC252, IC302, IC611 on VC-84 board) output voltage, and is as follows.

Adjustment data ( ) is decimal equivalent	EVR output voltage
FF (=255)	Maximum value (approx. 5 Vdc)
↑ F0 (=240)	↑
E0 (=224)	
D0 (=208)	
C0 (=192)	
B0 (=176)	
A0 (=160)	
90 (=144)	
80 (=128)	Center value (approx. 2.5 Vdc)
70 (=112)	
60 (=96)	
50 (=80)	
40 (=64)	
30 (=48)	
20 (=32)	
↓ 10 (=16)	↓
00 (=0)	Minimum value (approx. 0 Vdc)

Table 7-2.

6) The adjustment address is changed using the FF (►►) button or REW (◄◄) button to store the adjustment data in the nonvolatile memory of EVR/AWB microprocessor (IC361 on VC-84 board).

   (The new adjustment data is not stored in the nonvolatile memory unless this operation is performed.)

2. Precautions on use of adjustment remote controller

It is possible to accidentally erase correct adjustment data due to an error in operation of the adjustment remote controller. In order to prevent this, we recommend that you make a note of all adjustment data before adjustment and record the new adjustment data after completing each adjustment item.

Note: Data already described in the adjustment data memo column are fixed data.

Adjustment adderss	Adjustment voltage output terminal	Adjustment item	Remarks	Adjustment data memo column
01	Pin ⑱ of IC252	DELTA R	Auto white balance adjustment	
02	Pin ⑲ of IC252	DELTA B		
03	Pin ② of IC252	FADER		00
04	Pin ③ of IC252	C PED		A0
05	Pin ④ of IC252	R–Y GAIN	Color reproduction adjustment	
06	Pin ⑤ of IC252	B–Y GAIN		
07	Pin ⑥ of IC252	R–Y HUE		
08	Pin ⑦ of IC252	B–Y HUE		
09	Pin ⑧ of IC252	C LEVEL	Chroma level adjustment	
0A	Pin ⑨ of IC252	TITLE Y	Title Y level adjustment	
0B	Pin ⑫ of IC252	R GAIN	Indoor white balance adjustment	
0C	Pin ⑬ of IC252	B GAIN		
0D	Pin ⑱ of IC302	C1 GAIN	Chroma signal matrix adjustment (1)	
0E	Pin ⑲ of IC302	Y1 GAIN	Y signal matrix adjustment	
0F	Pin ② of IC302	FADER LEVEL	Not used	—
10	Pin ③ of IC302	BURST LEVEL		
11	Pin ④ of IC302	HUE CONT		
12	Pin ⑤ of IC302	SYNC LEVEL		
13	Pin ⑥ of IC302	SET UP		
14	Pin ⑦ of IC302	WHITE CLIP (WC)		
15	Pin ⑧ of IC302	Y LEVEL		
16	Pin ⑨ of IC302	APERTURE		
17	Pin ⑫ of IC302	YH GAIN		
18	Pin ⑬ of IC302	C2 GAIN	Chroma signal matrix adjustment (2)	
19	Pin ⑱ of IC611	IRIS		
1A			Not used	—
1B	Pin ② of IC611	HALL OFFSET	Hall adjustment	
1C	Pin ③ of IC611	MAX GAIN		
1D	Pin ④ of IC611	AGC		
1E	Pin ⑤ of IC611	V SUB		
1F			Not used	—
20	Pin ⑦ of IC611	PG CONT		
21	Pin ⑧ of IC611	TITLE A/D	Title A/D level adjustment	
22	Pin ⑫ of IC611	ZOOM L SPD	Power zoom speed adjustment	
23	Pin ⑫ of IC611	ZOOM H SPD		
24	Pin ⑬ of IC611	FOCUS SPEED		

Table 4-3. (1)

<table>
<tr><th>Adjustment adderss</th><th>Adjustment voltage output terminal</th><th>Adjustment item</th><th colspan="2">Remarks</th><th>Adjustment data memo column</th></tr>
<tr><td>25</td><td></td><td>MODE</td><td colspan="2">The following adjustment modes are selected by changing the adjustment data.<table><tr><th>Adjustment data</th><th>Adjustment mode</th></tr><tr><td>00</td><td>Release</td></tr><tr><td>01</td><td>Focus hunching</td></tr><tr><td>03</td><td>Zoom position</td></tr><tr><td>05</td><td>Hall, iris close</td></tr><tr><td>07</td><td>Hall, iris open</td></tr><tr><td>09</td><td>Hall in/out threshold</td></tr><tr><td>0B</td><td>AGC</td></tr><tr><td>FD</td><td>Auto-focus filter fixed at FA</td></tr><tr><td>FF</td><td>Auto-focus filter fixed at FH</td></tr></table></td><td>00</td></tr>
<tr><td>26</td><td></td><td>FG REF</td><td colspan="2"></td><td>36</td></tr>
<tr><td>27</td><td></td><td>MACRO</td><td colspan="2"></td><td></td></tr>
<tr><td>28</td><td></td><td>FHW/IN OUT DOOR</td><td colspan="2"></td><td>1A</td></tr>
<tr><td>29</td><td></td><td>BACK RUSH</td><td colspan="2"></td><td>31</td></tr>
<tr><td>2A</td><td></td><td>BASE-H</td><td colspan="2"></td><td>30</td></tr>
<tr><td>2B</td><td></td><td>LC-THR</td><td colspan="2"></td><td>18</td></tr>
<tr><td>2C</td><td></td><td>SEARCH</td><td colspan="2"></td><td>12</td></tr>
<tr><td>2D</td><td></td><td>HALL OUT</td><td colspan="2" rowspan="2">Hall in/out adjustment</td><td></td></tr>
<tr><td>2E</td><td></td><td>HALL IN</td><td></td></tr>
<tr><td>2F</td><td></td><td>STILL THR1</td><td colspan="2"></td><td>02</td></tr>
<tr><td>30</td><td></td><td>STILL THR2</td><td colspan="2"></td><td>02</td></tr>
<tr><td>31</td><td></td><td>STILL THR3</td><td colspan="2"></td><td>01</td></tr>
<tr><td>32</td><td></td><td>FH W</td><td colspan="2"></td><td></td></tr>
<tr><td>33</td><td></td><td>FH B</td><td colspan="2"></td><td></td></tr>
<tr><td>34</td><td></td><td>AGC W</td><td colspan="2"></td><td></td></tr>
<tr><td>35</td><td></td><td>AGC B</td><td colspan="2"></td><td></td></tr>
<tr><td>36</td><td></td><td>ZOOM THR</td><td colspan="2"></td><td>18</td></tr>
<tr><td>37</td><td></td><td>IRIS THR</td><td colspan="2"></td><td>18</td></tr>
<tr><td>38</td><td></td><td>V PULSE</td><td colspan="2"></td><td>68</td></tr>
<tr><td>39</td><td></td><td>R32MSB</td><td colspan="2" rowspan="6">3200K preset data
(The data written in this column are inputted automatically when performing the auto white balance adjustment.)</td><td></td></tr>
<tr><td>3A</td><td></td><td>R32LSB</td><td></td></tr>
<tr><td>3B</td><td></td><td>B32MSB</td><td></td></tr>
<tr><td>3C</td><td></td><td>B32LSB</td><td></td></tr>
<tr><td>3D</td><td></td><td>G32MSB</td><td></td></tr>
<tr><td>3E</td><td></td><td>G32LSB</td><td></td></tr>
<tr><td>3F</td><td></td><td>START R</td><td rowspan="2">R CONT and B CONT data when starting the auto white balance operation.</td><td rowspan="2">Auto white balance adjustment</td><td></td></tr>
<tr><td>40</td><td></td><td>START B</td><td></td></tr>
<tr><td>41</td><td></td><td>TM DIVID</td><td rowspan="2">Border value of the tracking frame</td><td rowspan="3">Auto white balance fixed data</td><td>44</td></tr>
<tr><td>42</td><td></td><td>BM DIVID</td><td>28</td></tr>
<tr><td>43</td><td></td><td>TOP SLP R</td><td>R CONT coefficient of the upper step of the tracking frame</td><td>80</td></tr>
</table>

Table 4-3. (2)

Adjustment adderss	Adjustment voltage output terminal	Adjustment item	Remarks		Adjustment data memo column
44		TOP SLP B	B CONT coefficient of the upper step of the tracking frame	Auto white balance adjustment	
45		MDL SLP R	R CONT and B CONT coefficient of the middle step of the tracking frame	Auto white balance fixed data	4B
46		MDL SLP B			40
47		BTM SLP R			30
48		BTM SLP B			50
49		KEIKO R			5C
4A		KEIKO B			20
4B		TOP UP	Upper and lower limit frames of the upper step of the tracking frame	Auto white balance adjustment	
4C		TOP DWN			
4D		MDL UP	Upper and lower limit frames of the upper, middle and lower steps of the tracking frame	Auto white balance fixed data	85
4E		MDL DWN			70
4F		BTM UP			6E
50		BTM DWN			53
51		KEIKO DWN			58
52		R DWN LMT	R CONT data upper and lower limit of the tracking frame		21
53		R TOP LMT			69
54		B UP LMT	B CONT data upper limit of the tracking frame	Auto white balance adjustment	
55		IN BTOP	INDOOR operation frame upper limit of the tracking frame		
56		IN BMAX	B CONT data upper limit of INDOOR mode		
57		OUT BMIN	B CONT data lower limit of OUTDOOR mode		
58		OUT BDWN	OUTDOOR mode operation frame lower limit of the tracking frame		
59		B DWN LMT	B CONT data lower limit of the tracking frame	Auto white balance fixed data	10
5A		R OUTDOOR	White balance preset data	Auto white balance adjustment	
5B		B OUTDOOR			
5C		Ra	R CONT and B CONT data of the points a, b and c on the curve of blackbody radiation		
5D		Rb			
5E		Rc			
5F		Ba			
60		Bb			
61		Bc			
62		R/B TOP	Slope data of the curve of blackbody radiation		
63		R/B MDL			
64		R/B DWN			
65		B/R TOP			
66		B/R MDL			
67		B/R DWN			

Table 4-3. (3)

<table>
<tr><th>Adjustment adderss</th><th>Adjustment voltage output terminal</th><th>Adjustment item</th><th colspan="2">Remarks</th><th>Adjustment data memo column</th></tr>
<tr><td>68</td><td></td><td>KEIKO</td><td>Indoor AWB data</td><td rowspan="9">Auto white balance fixed data</td><td>60</td></tr>
<tr><td>69</td><td></td><td>LL LMT</td><td>Minimum tracking illuminance</td><td>08</td></tr>
<tr><td>6A</td><td></td><td>B HUE KEI</td><td rowspan="5">Variable linear matrix data</td><td>00</td></tr>
<tr><td>6B</td><td></td><td>R GAIN OFF</td><td>00</td></tr>
<tr><td>6C</td><td></td><td>R GAIN KEI</td><td>00</td></tr>
<tr><td>6D</td><td></td><td>R HUE OFF</td><td>00</td></tr>
<tr><td>6E</td><td></td><td>R HUE KEI</td><td>00</td></tr>
<tr><td>6F</td><td></td><td>DELAY TM</td><td>Tracking speed</td><td>0C</td></tr>
<tr><td>70</td><td></td><td>FAST TM</td><td>Initial high speed tracking times</td><td>30</td></tr>
<tr><td>71</td><td></td><td>CAM DDS O</td><td colspan="2" rowspan="4">Fixed data</td><td>00</td></tr>
<tr><td>72</td><td></td><td>MODE</td><td>88</td></tr>
<tr><td>73</td><td></td><td>DSP MODE</td><td>00</td></tr>
<tr><td>74</td><td></td><td>CAM ALN</td><td>00</td></tr>
<tr><td>75</td><td></td><td>AWB MODE</td><td colspan="2">The following adjustment modes are selected by changing the adjustment data.
<table>
<tr><th>Adjustment data</th><th>Adjustment mode</th></tr>
<tr><td>00</td><td>Release, factory setting</td></tr>
<tr><td>10</td><td>Auto white balance adjustment mode</td></tr>
<tr><td>E0</td><td>3200K preset data read mode</td></tr>
<tr><td>F0</td><td>Auto white balance tracking zone discrimination invalid. All area discrimination mode.</td></tr>
</table></td><td>00</td></tr>
</table>

Table 4-3. (4)

7-1-5. Check Point Array

Almost all of the measurement points for camera block adjustment are located in the check point array on the VC-84 board. Solder short lead wires onto the terminals needed for adjustment and connect an oscilloscope, etc.

The terminal numbers and signal names for the check point array are shown in Table 7-4.

Terminal No.	Signal Name	Terminal No.	Signal Name
A1	G OUT	B1	N.C
A2	PG CONT	B2	N.C
A3	N.C	B3	Y (LPF) OUT
A4	Y0	B4	V SUB
A5	Y1	B5	AW ADJ
A6	C0	B6	$\overline{\text{CAM ADJ}}$
A7	C1	B7	OFF SET CONT
A8	CAM Y	B8	N.C
A9	YH	B9	N.C
A10	CAM C	B10	GND
A11	IRIS CONT	B11	IRIS DET

* N.C......no connection

Table 7-4.

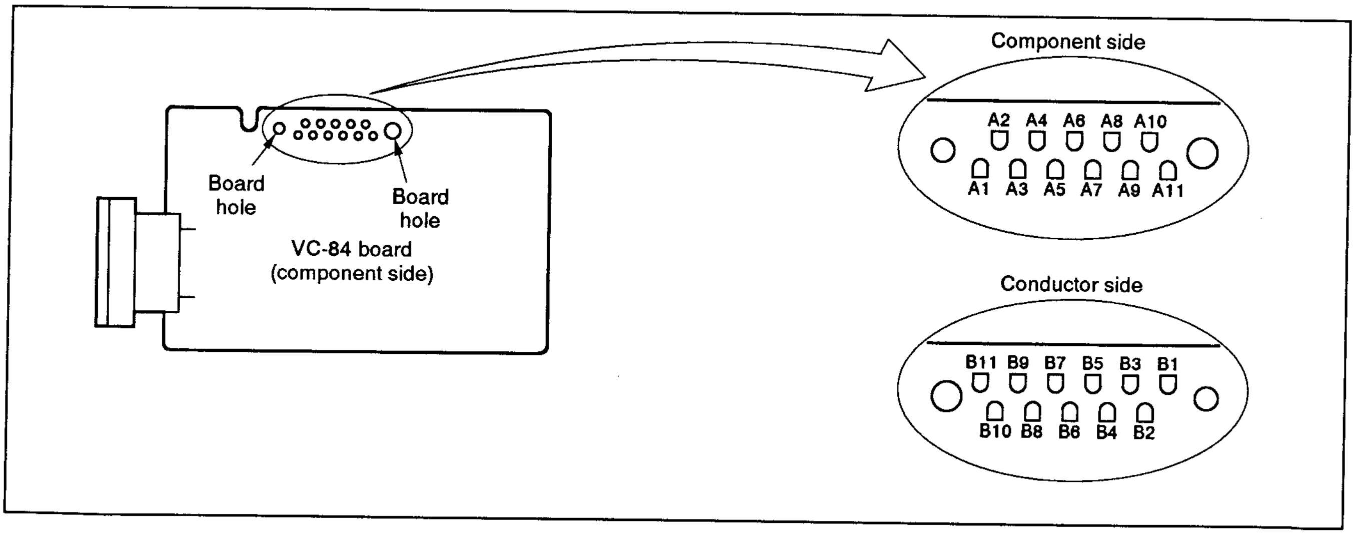

Component side
A2 A4 A6 A8 A10
A1 A3 A5 A7 A9 A11
Board hole
Board hole
VC-84 board (component side)
Conductor side
B11 B9 B7 B5 B3 B1
B10 B8 B6 B4 B2

Fig. 7-8.

7-1-6. AF Microprocessor Data Reading Jig

The AF microprocessor data reading jig converts the serial data (output data varies according to hall (iris) state, focus state, focus motor speed, zoom ring position, etc.) for adjustment output from the AF microprocessor (IC613 on VC-84 board) into a 2-digit hexadecimal code and displays it on the LED.

Connections:

Connect as shown in the diagram below.

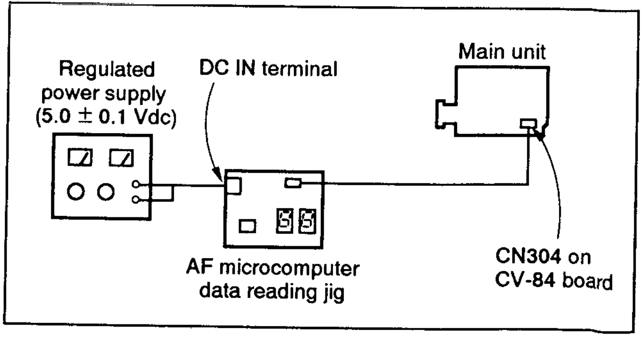

Main unit
Regulated power supply (5.0 ± 0.1 Vdc)
DC IN terminal
AF microcomputer data reading jig
CN304 on CV-84 board

Fig. 7-9.

7-1-7. Data Processing

For some of the adjustment items, calculation from the data (hexadecimal) indicated on the AF microprocessor data reading jig and adjustment remote controller is needed to obtain the adjustment data. In these cases, convert the hexadecimal values to decimal before calculation and reconvert the result to hexadecimal to obtain the adjustment data. A hexadecimal — decimal conversion table is shown in Table 7-5.

Hexadecimal-Decimal Conversion Table

Hexadecimal lower digit / Hexadecimal upper digit	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (c)	② D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A(A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
① B(b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C(c)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D(d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E(E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F(F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: ( ) is the indication on the jig or adjustment remote commander.

Example: The indication on the jig or adjustment remote commander is BD (b d).
As the upper digit is B (b) and the lower digit is D (d), a decimal value of 189 is obtained from the intersection of ① and ② in the above table.

Table 7-5.

7-2. CAMERA SYSTEM ADJUSTMENTS

7-2-1. Flange Back Adjustment

Subject	Siemens star (2 m directly in front of lens reference plane (CCD imager))
Measurement Point	Check with a monitor TV
Measuring Instrument	
Adjusting Element	Flange back adjusting pin
Tools	Phillips screwdriver, flat blade (–) screwdriver

Adjusting method:

1) Press the FOCUS switch (S757 on CF-0 board) to set to the MANUAL mode.
2) Position a Siemens star 2 m directly in front of the lens reference plane (See Fig. 7-2.).
3) Orient the camera block to have the center of the Siemens star imaged on the monitor TV screen coincide with the monitor screen center.
4) Check to assure the smooth motion of the zoom ring to both its extreme WIDE position (7 mm) and TELE position (42 mm) after pressing the zoom button, and then set it at the extreme WIDE position. (In this process, also check the monitor image to assure proper zooming operation.)
5) Select adjustment address 25 with the adjustment remote controller and enter adjustment data of 07. (Iris open mode) At this time, adjust the illumination on the Siemens star or place an ND filter over the lens, and confirm that the proper image is displayed on the monitor TV screen.
6) Set the lens focusing mark at the center of "2".

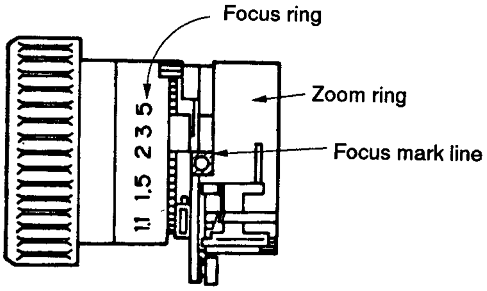


Fig. 7-10.

7) Loosen flange back setscrew ❶ with a Phillips screwdriver. (See Fig. 7-12.)
8) By turning the flange back adjusting Pin ❷ while watching the monitor screen, attain the optimum definition of a wedge at the Siemens star center on the screen. (Turn it a few turns to the left and right to ensure optimum definition.)
   Note: Do not turn the adjusting pin excessively in either direction.
9) While holding the flange back adjusting Pin ❷ to prevent further rotation, retighten the flange back setscrew ❶.
10) With the zoom ring fixed at its WIDE end, turn the focusing ring and set it to the position that provides the optimum definition image of the wedge. Check to assure the focusing mark protrusion position is within the range shown in Fig. 7-11. Also, rotate the focusing ring to the close (1.1 m) and far (∞) extremes and confirm that the wedge is no longer in focus.

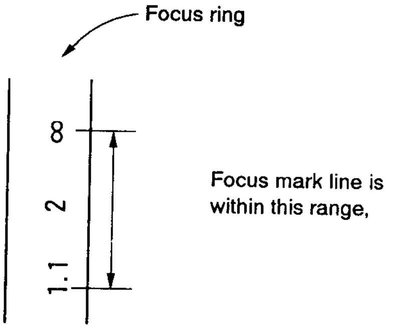


Fig. 7-11.

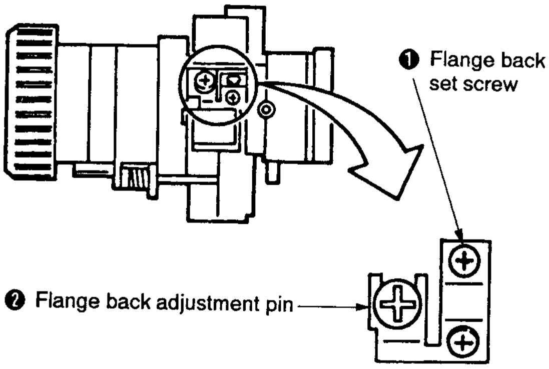


Fig. 7-12.

11) Fix the zoom lever at the extreme TELE position.
12) Turn the focusing ring and stop at the position where the wedge has optimum definition.
    Confirm that the focus mark is within ± 1.5 mm of "2".
13) Select adjustment address 25 with the adjustment remote controller and enter adjustment data of 00. (Iris normal)
14) Change the adjustment address to store the adjustment data in the memory.

7-2-2. Power Supply Check (VC-84 Board)

Measuring Instrument	Digital voltmeter
CAM 5V Check	
Measurement Point	Pin ④ of W801
Specified Value	4.95 ± 0.05 Vdc
23V Check	
Measurement Point	Pin ① of W801
Specified Value	23.08 ± 0.50 Vdc
15V Check	
Measurement Point	Pin ② of W801
Specified Value	15.0 ± 0.5Vdc
− 9V Check	
Measurement Point	Pin ③ of W801
Specified Value	−9.0 ± 0.5Vdc

Checking method:

1) Confirm that each power supply voltage meet the specified value.

4-2-3. EVR Initial Settings

Set to the following initial settings of the adjustment data only when the EVR/AWB microprocessor (IC361 on VC-84 board) was replaced.

Adjustment address	Adjustment data initial value	Adjustment address	Adjustment data initial value	Adjustment address	Adjustment data initial value
01 (DELTA R)	50	2B (LC-THR)	18	4E (MDL DWN)	70
02 (DELTA B)	50	2C (SEARCH)	12	4F (BTM UP)	6E
03(FADER OUT)	00	2F (STILL THR1)	02	50 (BTM DWN)	53
04 (C-PED)	A0	30 (STILL THR2)	02	51 (KEIKO DWN)	58
12 (SYNC LEVEL)	90	31 (STILL THR3)	01	52 (R DWN LMT)	21
13 (SET UP)	A0	32 (FH W)	00	53 (R TOP LMT)	69
14 (WC)	FF	33 (FH B)	01	59 (B DWN LMT)	10
15 (Y LEVEL)	A0	34 (AGC W)	10	68 (KEIKO)	60
17 (YH GAIN)	FF	35 (AGC B)	3F	69 (LL LMT)	08
19 (IRIS)	FF	36 (ZOOM THR)	18	6A (B HUE KEI)	00
1C (MAX GAIN)	C0	37 (IRIS THR)	18	6B (R GAIN OFF)	00
1D (AGC)	FF	38 (V PULSE)	68	6C (R GAIN KEI)	00
1E (V SUB)	40	41 (TM DIVID)	44	6D (R HUE OFF)	00
20 (PG CONT)	A0	42 (BM DIVID)	28	6E (R HUE KEI)	00
22 (ZOOM L SPD)	32	43 (TOP SLP R)	80	6F (DELAY TM)	0C
23 (ZOOM H SPD)	4F	45 (MDL SLP R)	4B	70 (FAST TM)	30
24 (FOCUS SPEED)	40	46 (MDL SLP B)	40	71 (CAM DDSO)	00
26 (FG REF)	36	47 (BTM SLP R)	30	72 (MODE)	88
27 (MACRO)	09	48 (BTM SLP B)	50	73 (DSP MODE)	00
28 (IN/OUT DOOR)	1A	49 (KEIKO R)	5C	74 (CAM ALN)	00
29 (BACK RUSH)	31	4A (KEIKO B)	20	75 (AWB MODE)	00
2A (BASE H)	30	4D (MDL UP)	85		

Table 7-6.

Adjusting method:

1) Set the RV701 (HALL ADJ) on the LD-36 board to the mechanical center.
2) Set the adjustment data at the various adjustment addresses to the initial values using the adjustment remote controller.
3) Change the adjustment address to store the last adjustment data in the memory.

7-2-4. 28MHz Local Oscillation Adjustment (VC-84 Board)

Subject	Not needed
Measurement Point	Pin ㉘ of IC612
Measuring Instrument	Frequency counter
Adjustment Address	CT143
Specified Value	14.18750 ± 0.0002 MHz

Adjusting method:

1) Adjust CT143 so that the oscillating frequency is 14.18750 ± 0.0002 MHz.

7-2-5. PLL Adjustment (VC-84 Board)

Subject	Not needed
Measurement Point	R152 side terminal of C152 or Pin ⑳ of IC141
Measuring Instrument	Digital voltmeter
Adjustment Element	CT142
Specified Value	2.5 ± 0.2 Vdc

Adjustment method:

1) Adjust to 2.5 ± 0.2 Vdc with CT142.

7-2-6. PG CONT and VSUB Adjustment

1. PG CONT adjustment (VC-84 board)

Subject	Not needed
Measurement Point	Pin (A2) (PG CONT) of check point array
Measuring Instrument	Digital voltmeter
Adjustment Address	20 (PG CONT)
Specified Value	(Voltage indicated by the imager) ± 0.1 Vdc

Adjusting method:

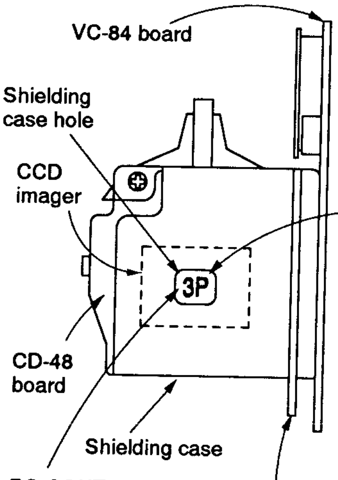
1) Change the adjustment data at adjustment address 20 using the adjustment remote controller to set the PG CONT voltage to (voltage indicated by the imager) ± 0.1 Vdc.
2) Change the adjustment address to store the adjustment data in the memory.

2. VSUB adjustment (VC-84 board)

Subject	Not needed
Measurement Point	Pin (B4) (V SUB) of check point array
Measuring Instrument	Digital voltmeter
Adjustment Address	1E (V SUB)
Specified Value	(Voltage indicated by the imager) ± 0.1 Vdc

Adjusting method:

1) Change the adjustment data at adjustment address 1E using the adjustment remote controller to set the VSUB voltage to (voltage indicated by the imager) ± 0.1 Vdc.
2) Change the adjustment address to store the adjustment data in the memory.



(Example)
When the indication is 3P;
PG CONT voltage specified value=2.0 ± 0.1 Vdc
V SUB voltage specified value=13.5 ± 0.1 Vdc

PG CONT voltage code

Code	Voltage (Vdc)
1	1.0
2	1.5
3	2.0
4	2.5
5	3.0
6	3.5
7	4.0

V SUB voltage code

Code	Voltage (Vdc)
E	9.0
F	9.5
G	10.0
H	10.5
J	11.0
K	11.5
L	12.0
M	12.5
N	13.0
P	13.5
Q	14.0
R	14.5
S	15.0
T	15.5
U	16.0
V	16.5
W	17.0
X	17.5
Y	18.0
Z	18.5

Fig. 7-13.

7-2-7. Hall Adjustment (LD-36 Board)

Subject	All black (cover lens with black cap)
Measurement Point	CN304 on the VC-84 board
Measuring Instrument	AF microprocessor data reading jig
Adjusting Element	RV701
Adjusment Address	1B (Hall Offset)
Specified Value	When iris closed: Minimum value of 01 to 04 When iris open: 3D or 3E

Preparations:

1) Prepare a 1 kΩ resistor for connecting Pin (A11) (IRIS CONT) of the check point array and CAM 5V (Pin ④ of W801).

Adjusting method:

1) Set RV701 to the mechanical center.
2) Set the adjustment address to 25 with the adjustment remote controller, and set the adjustment data to 05. At the same time, connect Pin (A11) of the check point array and CAM 5V using 1 kΩ resistance. (Setting when iris closed)
3) Change the adjustment address to 1B.
4) Change the adjustment data until the indication on the AF microprocessor data reading jig is the minimum value in the range of 01 to 04. (Hall offset adjustment)
5) Change the adjustment address to 25 and set the adjustment data to 07. At the same time, remove the 1 kΩ resistance at Pin (A11) of the check point array. (Setting when iris open)
6) Adjust RV701 until the indication on the AF microcomputer data reading jig is either 3D or 3E. (3D is indicated as 3d .)
7) Repeat steps 2) through 6) until meet the specified values.
8) Set the adjustment address to 25 and set the adjustment data to 00. (Releases adjustment mode)
9) Change the adjustment address to store the adjustment data in the memory.

7-2-8. Iris Adjustment (VC-84 Board)

Subject	Color bar chart standard picture frame
Filter	ND filter 0.4 and 0.1
Measurement Point	Pin (B11) (CCD OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	19 (Iris)
Specified Value	150 ± 10 mVp-p

Adjusting method:

1) Set the adjustment address to 19 with the adjustment remote controller.
2) Without attaching an ND filter, change the adjustment data with the adjustment remote controller to set the IRIS OUT signal level to 150 ± 10 mVp-p.
3) Attach the ND filter 0.5 (0.4+0.1) to the front of the lens and confirm that there is a smooth change in the signal level.
4) Remove the ND filter and confirm that the signal level is 150 ± 10 mVp-p.
5) Repeat 2) through 4) if the specified value is not met.
6) Change the adjustment address to store the adjustment data in the memory.

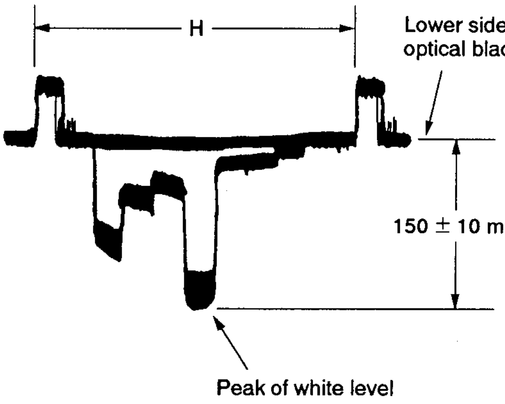


Fig. 7-14.

7-2-9. Hall In/Out Adjustment (VC-84 Board)

Subject	White pattern standard picture frame
Filter	ND filter 0.4 (two) and 0.1 (one)
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	2E (HALL IN) 2D (HALL OUT)

Adjusting method:

1) Cover the lens with the ND filter 0.8 (0.4+0.4).
2) Set the adjustment address to 25 with the adjustment remote controller and set the adjustment data to 09.
(Hall in/out threshold mode setting)
3) Read the data indicated on the AF microprocessor data reading jig and set this data to the adjustment address 2E.
4) Remove the ND filter 0.8 and replace it with ND filter 0.5 (0.4+0.1).
5) Read the data indicated on the AF microprocessor data reading jig and set this data to the adjustment address 2D.
6) Change the adjustment address to 25 and set the adjustment data to 00. (Releases hall in/out threshold mode)
7) Change the adjustment address to store the adjustment data in the memory.

7-2-10. AGC Adjustment (VC-84 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (B3) (Y (LPF) OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	1D (AGC)
Specified Value	160 ± 5 mVp-p

Adjusting method:

1) Set the adjustment address to 1D using the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the Y (LPF) signal level to 160 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

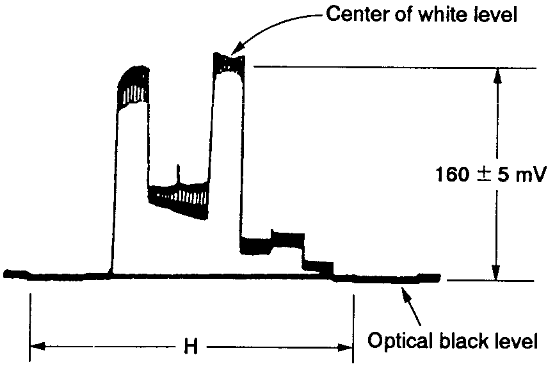


Fig. 7-15.

7-2-11. Y Signal Matrix Adjustment (VC-84 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin (A4) (Y0) of check point array 2: Pin (A5) (Y1) of check point array
Measuring Instrument	Oscilloscope[Note]
Adjustment Address	0E (Y1 GAIN)
Specified Value	Y1 signal level=Y0 signal level

Note: Attachh 10 kΩ resistor to tip of the probe (10:1).

Adjusting method:

1) Connect the oscilloscope to Pin (A4) of the check point array and measure the Y0 signal level.
2) Connect the oscilloscope to Pin (A5) of the check point array.
3) Set the adjustment address to 0E using the adjustment remote controller.
4) Change the adjustment data until the Y1 signal level is the same as the Y0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

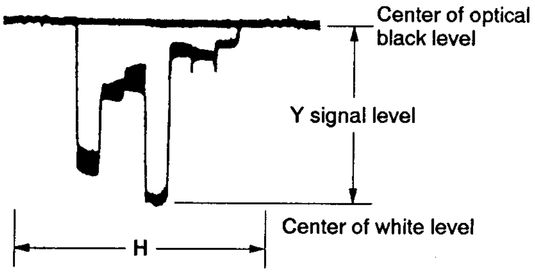


Fig. 7-16.

7-2-12. Chroma Signal Matrix Adjustment (1) (VC-84 Board)

Subject	Color bar standard picture frame
Measurement Point	1: Pin Ⓐ6 (C0) of check point array 2: Pin Ⓐ7 (C1) of check point array
Measuring Instrument	Oscilloscope Note
Adjustment Address	0D (C1 GAIN)
Specified Value	C1 signal level=C0 signal level

Note: Attachh 10 kΩ resistor to tip of the probe (10:1).

Adjusting method:

1) Connect the oscilloscope to Pin Ⓐ6 of the check point array and measure the C0 signal level. (The C0 signal level is the larger of the CR and CB signal levels.)
2) Connect the oscilloscope to Pin Ⓐ7 of the check point array.
3) Set the adjustment address to 0D using the adjustment remote controller.
4) Change the adjustment data until the C1 signal level is the same as the C0 signal level measured in 1).
5) Change the adjustment address to store the adjustment data in the memory.

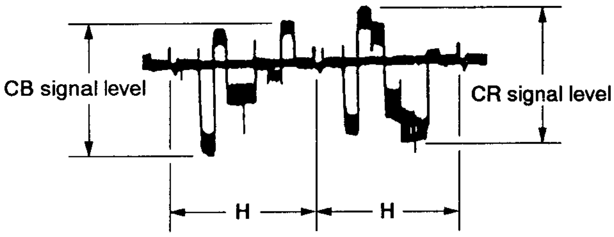


Fig. 7-17. C0 and C1 signal levels

7-2-13. Chroma Signal Matrix Adjustment (2) (VC-84 Board)

Subject	Color bar standard picture frame
Measurement Point	CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	18 (C2 GAIN)
Specified Value	Separate color luminance points become one.

Note: Adjustment can be made in the same manner using a vectorscope.
(Vectorscope connection terminal: VIDEO output terminal)

Adjusting method:

1) Set the adjustment address to 18 using the adjustment remote controller.
2) Change the adjustment data so that the two separate color luminance points become one respectively.
3) Change the adjustment address to store the adjustment data in the memory.

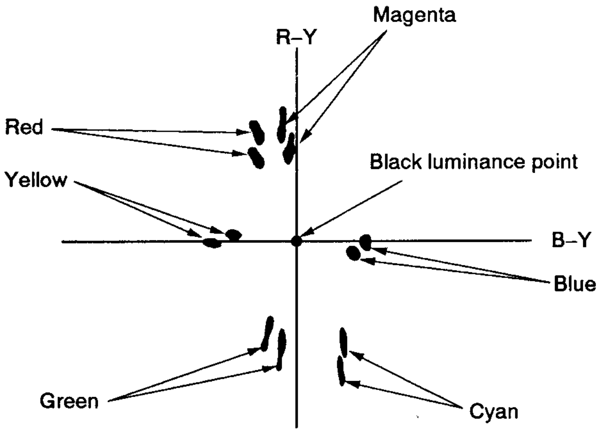


Fig. 7-18.

7-2-14. YH Level Adjustment (VC-84 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin(A9) (YH) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	17 (YH GAIN)
Specified Value	900 ± 40 mVp-p

Adjusting method:

1) Set the adjustment address to 17 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the YH signal level to 900 ± 40 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

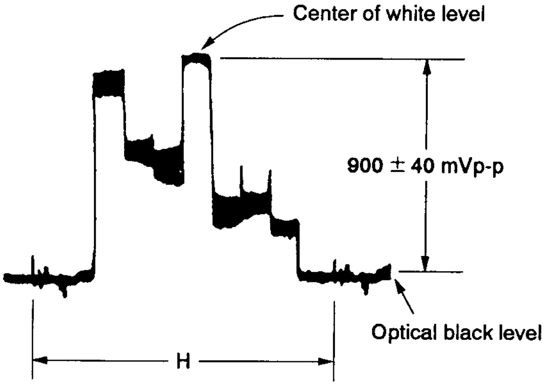


Fig. 7-19.

7-2-15. Sync Level Adjustment (VC-84 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (A8)(CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	12 (SYNC LEVEL)
Specified Value	300 ± 5 mVp-p

Adjusting method:

1) Set the adjustment address to 12 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the sync level to 300 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

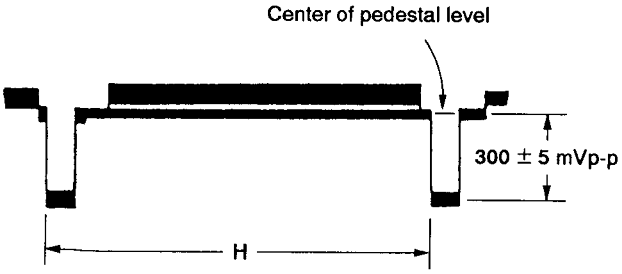


Fig. 7-20.

7-2-16. Setup Adjustment (VC-84 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin(A8)(CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	13 (SET UP)
Specified Value	30 ± 10 mV

Note: 1) and 2) are steps taken to reduce noise.

Adjusting method:

1) Set the address to 16 (APERTURE) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
2) Set the address to 1C (MAX GAIN) with the adjustment remote controller, and enter 00 as the adjustment data after making a note of the adjustment data for this address.
3) Set the adjustment address to 13 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the setup level to 30 ± 10 mV.
5) Set the adjustment address to 16 and enter the adjustment data recorded in 1).
6) Set the adjustment address to 1C and enter the adjustment data recorded in 2).
7) Change the adjustment address to store the adjustment data in the memory.

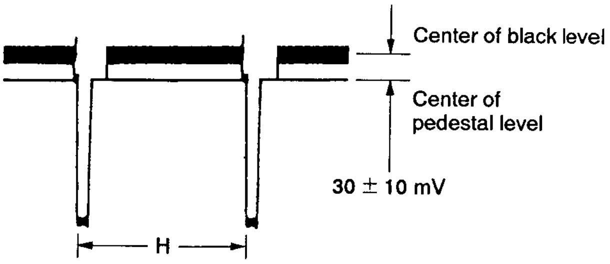


Fig. 7-21.

7-2-17. White Clip Adjustment (VC-84 Board)

Subject	High luminance pattern
Measurement Point	Pin (A8) (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	14 (WHITE CLIP)
Specified Value	840 ± 20 mV

Adjusting method:

1) Set the adjustment address to 15 with the adjustment remote controller, and make a note of the adjustment data for this address.
2) Set the adjustment data to 40 with the adjustment remote controller.
3) Set the adjustment address to 14 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the white clip level to 840 ± 20 mV.
5) Set the adjustment address to 15 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

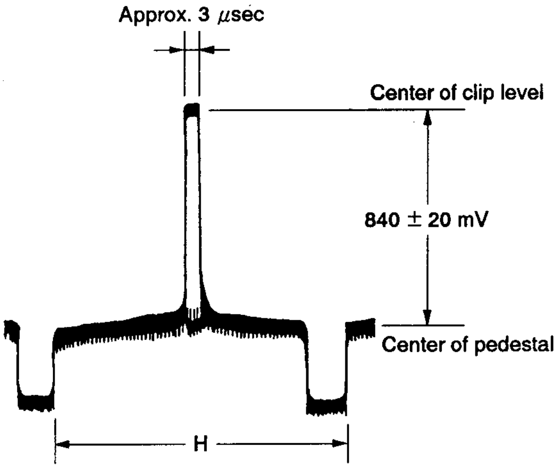


Fig. 7-22.

7-2-18. Y Level Adjustment (VC-84 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A8) (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	15 (Y LEVEL)
Specified Value	640 ± 10 mV

Adjusting method:

1) Set the adjustment address to 14 with the adjustment remote controller, and make a note of the adjustment data for this address.
2) Set the adjustment data to FF with the adjustment remote controller.
3) Set the adjustment address to 15 with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the Y signal level to 640 ± 10 mV.
5) Set the adjustment address to 14 and enter the adjustment data recorded in 1).
6) Change the adjustment address to store the adjustment data in the memory.

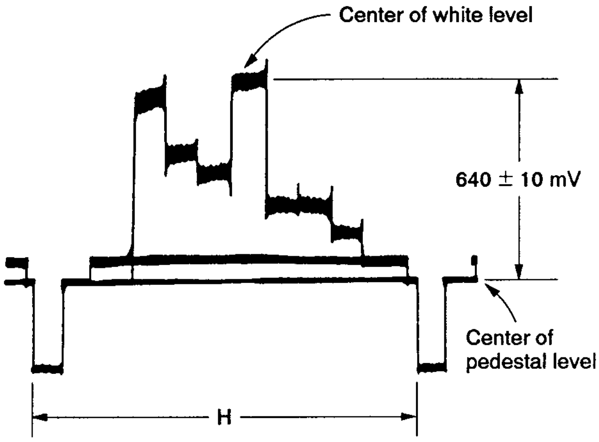


Fig. 7-23.

7-2-19. Max. Gain Adjustment (VC-84 Board)

Subject	Color bar chart standard picture frame
Filter	ND filters 1.0 (two) and 0.4 (one)
Measurement Point	Pin Ⓐ8 (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	1C (MAX GAIN)
Specified Value	300 ± 10 mV

Adjusting method:

1) Cover the lens with the ND filter 2.4 (1.0+1.0+0.4).
2) Set the adjustment address to 1C with the adjustment remote controller.
3) Change the adjustment data with the adjustment remote controller to set the Y signal level to 300 ± 10 mV.
4) Change the adjustment address to store the adjustment data in the memory.

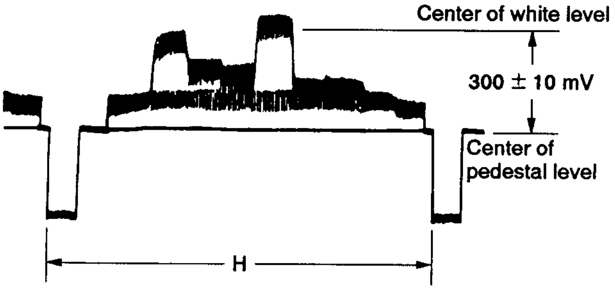


Fig. 7-24.

7-2-20. Aperture Adjustment (VC-84 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin Ⓐ8 (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	16 (APERTURE)
Specified Value	290 ± 10 mV

Adjusting method:

1) Set the adjustment address to 16 with the adjustment remote controller.
2) Focus the camera and set the aperture level (lower peak between green and white) to maximum.
3) Change the adjustment data to set the lower peak between green and white to 290 ± 10 mV above the pedestal level.
4) Change the adjustment address to store the adjustment data in the memory.

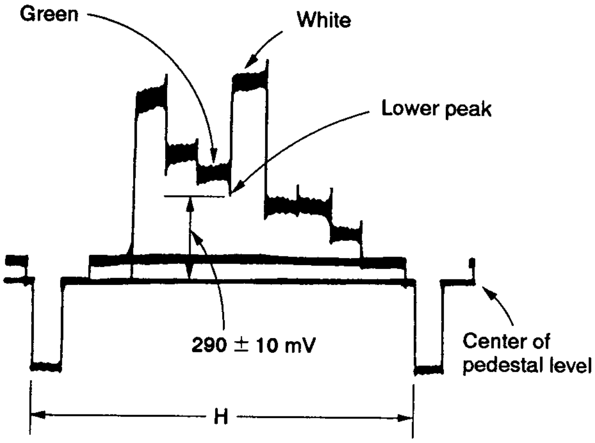


Fig. 7-25.

7-2-21. Chroma Level Adjustment (VC-84 Board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A1) (G OUT) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	09 (C LEVEL)
Specified Value	320 ± 20 mVp-p

Connections:

1) Connect Pin (B7) (OFFSET CONT) of the check point array to GND using a jumper wire.

Adjusting method:

1) Set the adjustment address to 09 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the G OUT signal level to 320 ± 20 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

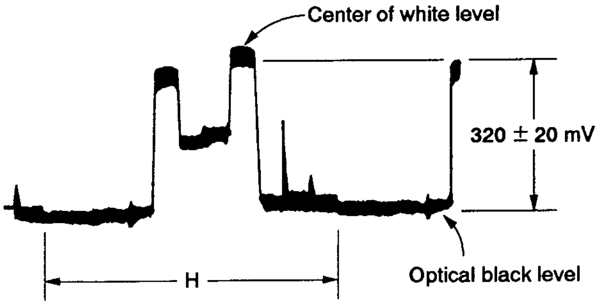


Fig. 7-26.

7-2-22. Burst Phase Adjustment (Method Using Vectorscope)

Subject	All black (cover lens with black cap)
Measurement Point	VIDEO output terminal
Measuring Instrument	Vectrscope
Adjustment Address	11 (HUE CONT)
Specified Value	135° ± 2°

Adjustment method:

1) Set adjustment address to 11 with the adjustment remote controller.
2) Change adjustment data so as to set the burst luminance point in the 135° ± 2° position.
3) Change the adjustment address to store the adjustment data in the memory.
4) Perform Burst Level Adjustment.

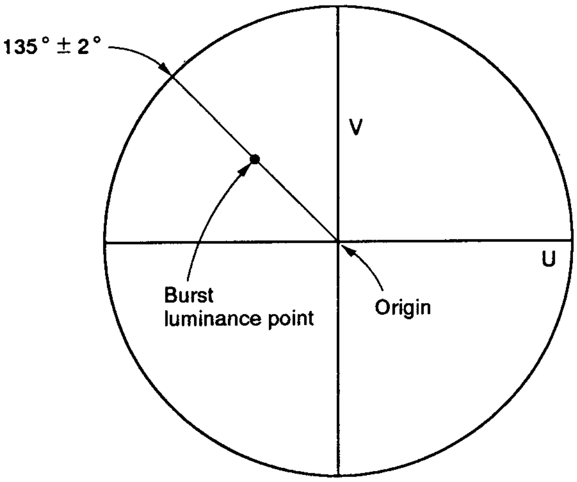


Fig. 7-27.

7-2-23. Burst Phase Adjustment (VC-84 Board) (Mothod Using Oscilloscope)

Subject	All black (cover lens with black cap)
Measurement Point	VIDEO output terminal
Measuring Instrument	Oscilloscope (Trigger slope:+)
Adjustment Address	11 (HUE CONT)
Specified Value	Burst phase should become a single line.

Adjusing method:

1) Set adjustment address to 11 with the adjustment remote controller.
2) Change the adjustment data so as to turn the burst waveform into a single line.
3) Change the adjustment address to store the adjustment data in the memory.
4) Perform Burst Level Adjustment.

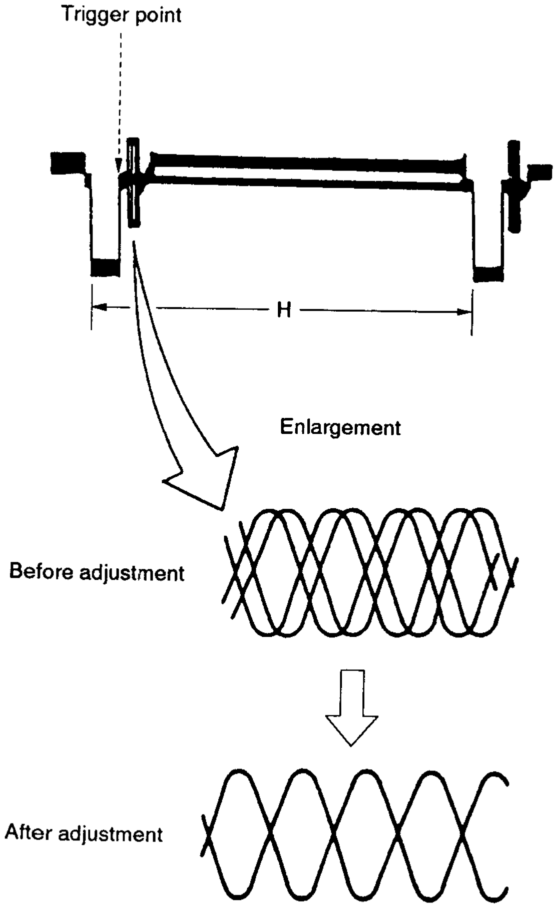


Fig. 7-28.

7-2-24. Burst Level Adjustment (VC-84 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (A10) (CAM C) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	10 (BURST LEVEL)
Specified Value	200 ± 5 mVp-p

Adjusting method:

1) Set the adjustment address to 10 with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to set the burst level to 200 ± 5 mVp-p.
3) Change the adjustment address to store the adjustment data in the memory.

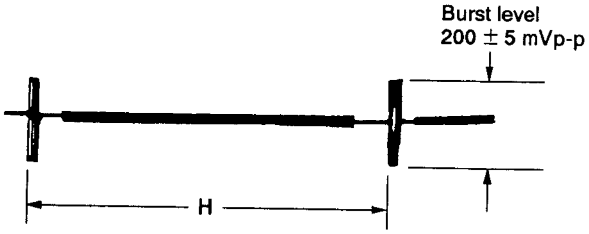


Fig. 7-28.

7-2-25. Indoor White Balance Adjustment (Method Using Vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	VIDEO output terminal
Measuring Instrument	Vectorscope
Adjustment Address	0B (R GAIN) 0C (B GAIN)
Specified Value	The center of the white luminance point is within a circle with a diameter of 1 mm centered around the origin.

Adjusting method:

1) Set the adjustment address to 0B with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to match the white luminance point with the origin.
3) Set the adjustment address to 0C.
4) Change the adjustment data to match the white luminance point with the origin.
5) Repeat steps 1) through 4).
   (Each adjustment data should be 60 to FF)
6) Change the adjustment address to store the adjustment data in the memory.

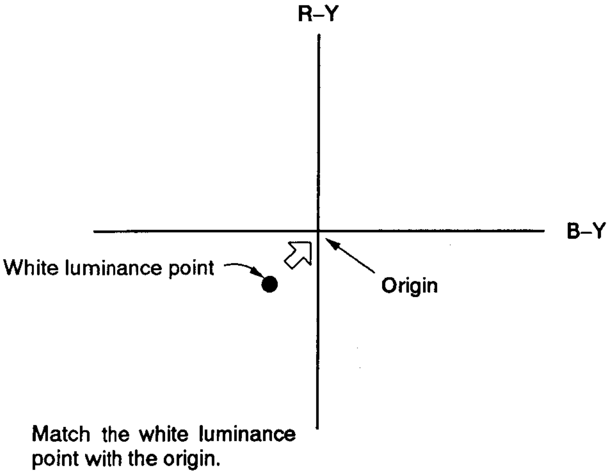

R-Y
B-Y
White luminance point
Origin
Match the white luminance point with the origin.

Fig. 7-30.

7-2-26. Indoor White Balance Adjustment (Method Using Oscilloscope) (VC-84 Board)

Subject	Color bar chart standard picture frame
Measurement Point	CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	0B (R GAIN) 0C (B GAIN)
Specified Value	Move the white luminance point to the black luminance point.

Adjusting method:

1) Set the adjustment address to 0B with the adjustment remote controller.
2) Change the adjustment data with the adjustment remote controller to match the white luminance point with the black luminance point.
3) Set the adjustment address to 0C.
4) Change the adjustment data to match the white luminance point with the black luminance point.
5) Repeat steps 1) through 4).
   (Each adjustment data should be 60 to FF)
6) Change the adjustment address to store the adjustment data in the memory.

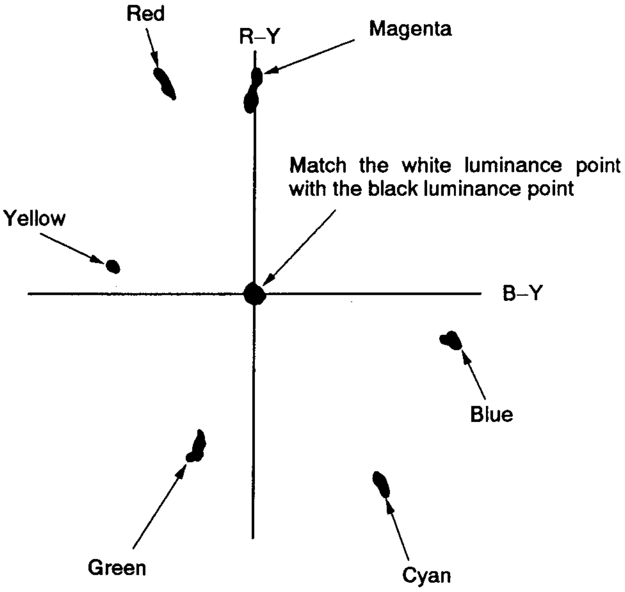

Red
R-Y
Magenta
Match the white luminance point with the black luminance point
Yellow
B-Y
Blue
Green
Cyan

Fig. 7-31.

7-2-27. Color Reproduction Adjustment (Method Using Vectorscope)

Subject	Color bar chart standard picture frame
Measurement Point	VIDEO output terminal
Measuring Instrument	Vectorscope
Adjustment Address	05 (R–Y GAIN) 07 (R–Y HUE) 06 (B–Y GAIN) 08 (B–Y HUE)
Specified Value	All color luminance points are within color reproduction frame.

Note: Confirm that "Burst Phase Adjustment", "Burst Level Adjustment" and "Indoor White Balance Adjustment" have been completed.

Adjusting method:

1) Adjust the phase and gain of the vectorscope to set the burst luminance points to the designated position on the color reproduction frame.
2) Change the adjustment data at the various adjustment addresses using the adjustment remote controller until all color luminance points are within the color reproduction frame. (Each adjustment data should be 40 to FF)
3) Change the adjustment address to store the adjustment data in the memory.

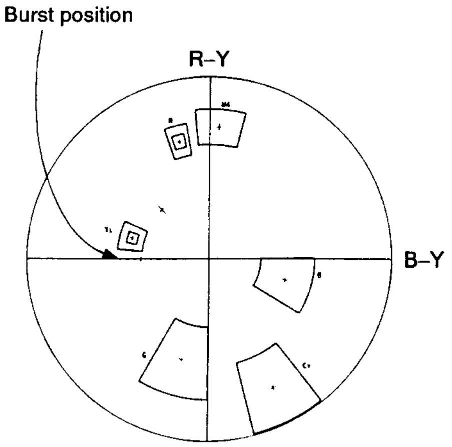


Fig. 7-32.

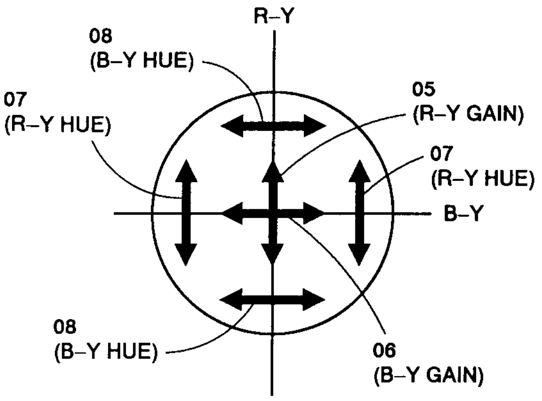


Fig. 7-33. Adjustment address and direction of luminance point movement

7-2-28. Color Reproduction Adjustment (Method Using Oscilloscope)

1. Gain adjustment (VC-84 board)

Subject	Color bar chart standard picture frame
Measurement Point	Pin (A10) (CAM C) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	05 (R–Y GAIN) 06 (B–Y GAIN)
Specified Value	Red level: 387 ± 22 mVp-p Yellow level: 255 ± 16 mVp-p

Note: Confirm that "Indoor White Balance Adjustment" is completed.

Adjusting method:

1) Set the adjustment address to 06 with the adjustment remote controller and set the adjustment data to B0.
2) Set the adjustment address to 07 and set the adjustment data to C0.
3) Set the adjustment address to 08 and set the adjustment data to C0.
4) Set the adjustment address to 05 and change the adjustment data to set the chroma signal "red" level to 387 ± 22 mVp-p.
5) Set the adjustment address to 06 and change the adjustment data to set the chroma signal "yellow" level to 255 ± 16 mVp-p.
6) Repeat steps 4) and 5).
   (Each adjustment data should be 40 to FF)
7) Change the adjustment address to store the adjustment data in the memory.
8) Perform "Hue Adjustment".

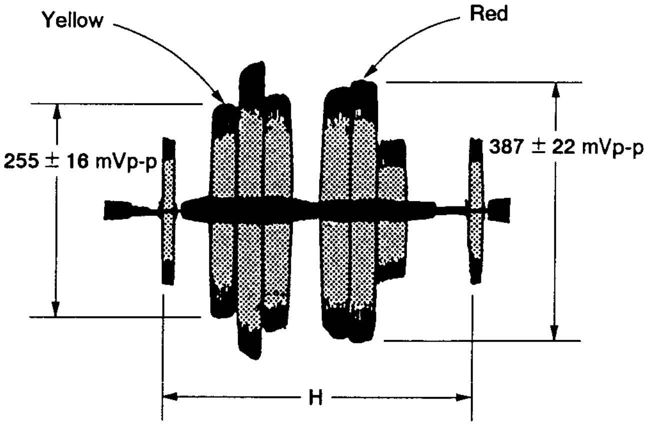


Fig. 7-34.

2. Hue adjustment (VC-84 board)

Subject	Color bar chart standard picture frame
Measurement Point	CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Measuring Instrument	Oscilloscope (X-Y mode)
Adjustment Address	07 (R–Y HUE) 08 (B–Y HUE)
Specified Value	Various color luminance points within color reproduction frame.

Note: Make sure that "Indoor White Balance Adjustment" is completed.

Adjusting method:

1) Match the "black" luminance point on the oscilloscope with the origin of the color reproduction frame.
2) Change the adjustment data at adjustment addresses 07 and 08 with the adjustment remote controller to bring the various color luminance points into the color reproduction frame.
3) Check the hue reproduced on the monitor TV and fine adjust the adjustment data at adjustment addresses 07 and 08 if necessary. (Each adjustment data should be 40 to FF)
4) Set the oscilloscope to the normal mode and connect it to Pin (A10) of the check point array and confirm that the specified value of "1. Gain Adjustment" is satisfied. Change the data at the adjustment address 05 and 06 if the specified value is not met.
5) Change the adjustment address to store the adjustment data in the memory.

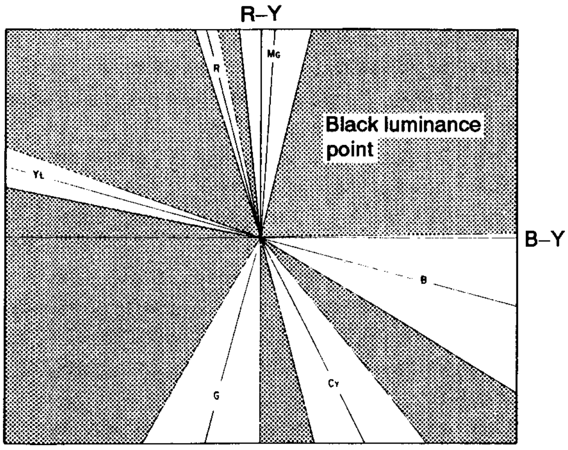


Fig. 7-35.

7-2-29. Auto White Balance Adjustment

Note: Be sure to first perform "Preset Adjustment" followed by "Auto White Balance Adjustment".

1. Preset adjustment (VC-84 board)

Subject	White pattern standard picture frame

Note: 1) Perform preset adjustment after supplying power to the unit for at least 30 seconds.
2) When performing preset adjustment again, once OFF/ON the power.

Preparations:

1) Prepare a 1 kΩ resistor for connecting Pin (B5) (AW ADJ) of the check point array and Pin ④ (CAM 5V) of W801.

Adjusting method:

1) Connect the Pin (B6) (CAM ADJ) of the check point array to the ground with a jumper wire after turning the power OFF and ON. Wait at least 30 seconds.
2) Select adjustment address 75 (AWB MODE) and set the adjustment data to E0.
3) Change the adjustment address to store the adjustment data in the memory.
4) Remove the jumper wire between Pin (B6) (CAM ADJ) of the check point array and the ground.
5) Connect Pin (B5) (AWB ADJ) of the check point array and Pin ④ of W801 (CAM 5V) with a 1 kΩ resistor.
6) Connect Pin (B6) (CAM ADJ) of the check point array to the ground using a jumper wire.
7) Confirm that the data indicated (address 01) on the adjustment remote controller is changed.
8) Remove the jumper wire connected to Pin (B6) (CAM ADJ) of the check point array after elapse of one second or more.
9) Remove the 1 kΩ resistor connected to Pin (B5) (AWB ADJ) of the check point array.
10) Connect Pin (B6) (CAM ADJ) of the check point array to the ground using a jumper wire.
11) Perform the following "Auto white balance adjustment".

2. Auto white balance adjustment (VC-84 board)

Note: Be sure to perform "Preset adjustment" before this adjustment.

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measuring Instrument	Oscilloscope (X-Y Mode)[Note 1]
Measurement Point	CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Adjustment Address	01 (DELTA R) 5C (Ra) 02 (DELTA B) 5D (Rb) 3F (START R) 5E (Rc) 40 (START B) 5F (Ba) 44 (TOP SLP B) 60 (Bb) 4B (TOP UP) 61 (Bc) 4C (TOP DWN) 62 (R/B TOP) 54 (B UP LMT) 63 (R/B MDL) 55 (IN BTOP) 64 (R/B DWN) 56 (IN BMAX) 65 (B/R TOP) 57 (OUT BMIN) 66 (B/R MDL) 58 (OUT BDWN) 67 (B/R DWN) 5A (R OUTDOOR) 5B (B OUTDOOR)
Specified Value	Line up the white luminance point with the black luminance point.

Note: 1) Adjustment can be made in the same manner using a vectorscope.
Connect to VIDEO output terminal when the vectorscope is used.
2) All calculations in this section are made in decimal.

Adjusting method:

- Outdoor preset adjustment

1) Select the adjustment address 75 (AWB MODE) with the adjustment remote controller and set the adjustment data to 10.
2) Cover the lens with C14 filter.
3) Change the adjustment data at the adjustment addresses 01 and 02 alternately with the adjustment remote controller to match the white luminance point with the black luminance point. (Match the white luminance point with the origin when using the vectorscope.)
The adjustment data of adjustment address 01 will be C_1 and the adjustment data of adjustment address 02 will be C_2.

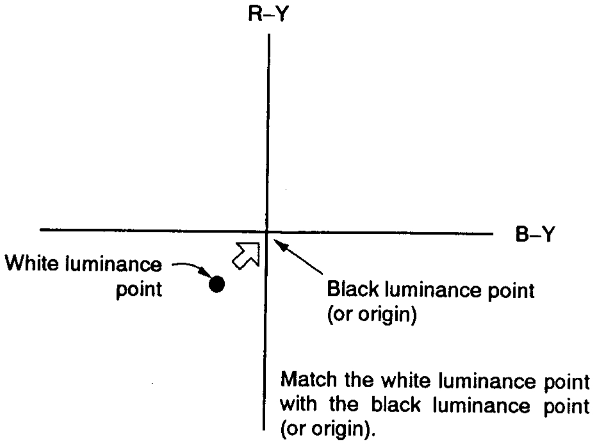

R–Y
B–Y
White luminance point
Black luminance point (or origin)
Match the white luminance point with the black luminance point (or origin).

Fig. 7-36.

- Adjustment data input with the tables

4) When C_2 value is from 3F through 55, obtain the adjustment data at the adjustment addresses 40, 54 to 58, 5B, 5F, 60 and 61 by Table 7-7., and enter the data into each address with the adjustment remote controller.
5) When C_1 value is from 25 through 30, obtain the adjustment data at the adjustment addresses 3F, 5A, 5C, 5D and 5E with Table 7-8., and enter the data into each address with the adjustment remote controller.
6) When C_1 value is from 25 through 30 and C_2 value is from 3F through 55, obtain the adjustment data of the adjustment addresses 44, 4B, 4C and 62 to 67 with Table 7-9., and enter the data into each address with the adjustment remote controller.
7) When the data input to all adjustment addresses with the Tables has completed in 4) through 6), perform the adjustments after 15). If there is the adjustment address in which the data input is impossible, perform the following "Adjustment data input by calculation".

C1	C2	Adjustment address								
		44	4B	4C	62	63	64	65	66	67
28	3F	3A	A0	82	20	3A	5C	20	12	B
	40	31	98	7A	1B	34	5C	25	14	B
	41	31	99	7B	1B	34	53	25	14	C
	42	31	99	7B	1B	30	53	25	15	C
	43	2B	93	75	18	30	4C	2B	15	E
	44	2B	94	76	18	2C	4C	2B	17	E
	45	26	8F	71	15	2C	45	30	17	F
	46	26	90	72	15	29	45	30	19	F
	47	26	90	72	15	29	40	30	19	10
	48	23	8C	6E	13	26	40	35	1B	10
	49	23	8D	6F	13	26	3B	35	1B	11
	4A	23	8D	6F	13	24	3B	35	1C	11
	4B	1F	8A	6C	11	22	3B	3B	1E	11
	4C	1F	8B	6D	11	22	37	3B	1E	12
	4D	1F	8B	6D	11	20	37	3B	20	12
	4E	1D	88	6A	10	20	34	40	20	14
	4F	1D	89	6B	10	1E	34	40	22	14
	50	1D	89	6B	10	1E	31	40	22	15
	51	1B	87	69	F	1D	31	45	24	15
	52	1B	87	69	F	1D	2E	45	24	16
	53	1B	87	69	F	1B	2E	45	25	16
	54	19	85	67	E	1B	2C	4B	25	17
	55	19	86	68	E	1A	2C	4B	27	17
29	3F	3A	A2	84	20	3A	55	20	12	C
	40	31	9A	7C	1B	34	55	25	14	C
	41	31	9B	7D	1B	34	4D	25	14	D
	42	31	9B	7D	1B	30	4D	25	15	D
	43	2B	95	77	18	30	46	2B	15	F
	44	2B	96	78	18	2C	46	2B	17	F
	45	26	91	73	15	2C	40	30	17	10
	46	26	92	74	15	29	40	30	19	10
	47	26	92	74	15	29	3B	30	19	11
	48	23	3E	70	13	26	3B	35	1B	11
	49	23	8F	71	13	26	37	35	1B	13
	4A	23	8F	71	13	24	37	35	1C	13
	4B	1F	8C	6E	11	22	37	3B	1E	13
	4C	1F	8D	6F	11	22	33	3B	1E	14
	4D	1F	8D	6F	11	20	33	3B	20	14
	4E	1D	8A	6C	10	20	30	40	20	15
	4F	1D	8B	6D	10	1E	30	40	22	15
	50	1D	8B	6D	10	1E	2D	40	22	17
	51	1B	89	6B	F	1D	2D	45	24	17
	52	1B	89	6B	F	1D	2B	45	24	18
	53	1B	89	6B	F	1B	2B	45	25	18
	54	19	87	69	E	1B	28	4B	25	19
	55	19	88	6A	E	1A	28	4B	27	19
2A	3F	26	90	72	15	33	55	30	14	C
	40	21	8B	6D	12	2F	55	38	16	C
	41	21	8B	6D	12	2F	4D	38	16	D
	42	21	8C	6E	12	2B	4D	38	18	D
	43	1D	87	69	10	2B	46	40	18	F
	44	1D	88	6A	10	27	46	40	1A	F
	45	1A	85	67	E	27	40	48	1A	10
	46	1A	85	67	E	25	40	48	1C	10
	47	1A	86	68	E	25	3B	48	1C	11
	48	17	83	65	D	22	3B	50	1E	11
	49	17	83	65	D	22	37	50	1E	13
	4A	17	84	66	D	20	37	50	20	13
	4B	15	81	63	C	1E	37	58	22	13
	4C	15	82	64	C	1E	33	58	22	14
	4D	15	82	64	C	1C	33	58	24	14
	4E	13	80	62	B	1C	30	60	24	15
	4F	13	80	62	B	1B	30	60	26	15
	50	13	81	63	B	1B	2D	60	26	17
	51	12	7F	61	A	1A	2D	68	28	17
	52	12	7F	61	A	1A	2B	68	28	18
	53	12	80	62	A	18	2B	68	2A	18
	54	10	7E	60	9	18	28	70	2A	19
	55	10	7E	60	9	17	28	70	2C	19
2B	3F	26	92	74	15	33	4E	30	14	D
	40	21	8D	6F	12	2F	4E	38	16	D
	41	21	8D	6F	12	2F	46	38	16	F
	42	21	8E	70	12	2B	46	38	18	F
	43	1D	89	6B	10	2B	40	40	18	10
	44	1D	8A	6C	10	27	40	40	1A	10
	45	1A	87	69	E	27	3B	48	1A	11
	46	1A	87	69	E	25	3B	48	1C	11
	47	1A	88	6A	E	25	36	48	1C	13
	48	17	85	67	D	22	36	50	1E	13
	49	17	85	67	D	22	32	50	1E	14
	4A	17	86	68	D	20	32	50	20	14
	4B	15	83	65	C	1E	32	58	22	14
	4C	15	84	66	C	1E	2F	58	22	16
	4D	15	84	66	C	1C	2F	58	24	16
	4E	13	82	64	B	1C	2C	60	24	17
	4F	13	83	64	B	1B	2C	60	26	17
	50	13	83	65	B	1B	29	60	26	19
	51	12	81	63	A	1A	29	68	28	19
	52	12	81	63	A	1A	27	68	28	1A
	53	12	82	64	A	18	27	68	2A	1A
	54	10	80	62	9	18	25	70	2A	1C
	55	10	80	62	9	17	25	70	2C	1C
2C	3F	26	94	76	15	2D	4E	30	17	D
	40	21	8F	71	12	29	4E	38	19	D
	41	21	8F	71	12	29	46	38	19	F
	42	21	90	72	12	25	46	38	1B	F
	43	1D	8B	6D	10	25	40	40	1B	10
	44	1D	8C	6E	10	22	40	40	1E	10
	45	1A	89	6B	E	22	3B	48	1E	11
	46	1A	89	6B	E	20	3B	48	20	11
	47	1A	8A	6C	E	20	36	48	20	13
	48	17	87	69	D	1E	36	50	22	13
	49	17	87	69	D	1E	32	50	22	14
	4A	17	88	6A	D	1C	32	50	25	14
	4B	15	85	67	C	1A	32	58	27	14
	4C	15	86	68	C	1A	2F	58	27	16
	4D	15	86	68	C	19	2F	58	29	16
	4E	13	84	66	B	19	2C	60	29	17
	4F	13	84	66	B	18	2C	60	2B	17
	50	13	85	67	B	18	29	60	2B	19
	51	12	83	65	A	16	29	68	2E	19
	52	12	83	65	A	16	27	68	2E	1A
	53	12	84	66	A	15	27	68	30	1A
	54	10	82	64	9	15	25	70	30	1C
	55	10	82	64	9	14	25	70	32	1C
2D	3F	26	96	78	15	2D	47	30	17	E
	40	21	91	73	12	29	47	38	19	E
	41	21	91	73	12	29	40	38	19	10
	42	21	92	74	12	25	40	38	1B	10
	43	1D	8D	6F	10	25	3A	40	1B	12
	44	1D	8E	70	10	22	3A	40	1E	12
	45	1A	8B	6D	E	22	35	48	1E	13
	46	1A	8B	6D	E	20	35	48	20	13
	47	1A	8C	6E	E	20	31	48	20	15
	48	17	89	6B	D	1E	31	50	22	15
	49	17	89	6B	D	1E	2E	50	22	16
	4A	17	8A	6C	D	1C	2E	50	25	16
	4B	15	87	69	C	1A	2E	58	27	16
	4C	15	88	6A	C	1A	2B	58	27	18
	4D	15	88	6A	C	19	2B	58	29	18
	4E	13	86	68	B	19	28	60	29	1A
	4F	13	86	68	B	18	28	60	2B	1A
	50	13	87	69	B	18	26	60	2B	1B
	51	12	85	67	A	16	26	68	2E	1B
	52	12	85	67	A	16	24	68	2E	1D
	53	12	86	68	A	15	24	68	30	1D
	54	10	84	66	9	15	22	70	30	1E
	55	10	84	66	9	14	22	70	32	1E
2E	3F	26	98	7A	15	2D	40	30	17	10
	40	21	93	75	12	29	40	38	19	10
	41	21	93	75	12	29	3A	38	19	12
	42	21	94	76	12	25	3A	38	1B	12
	43	1D	8F	71	10	25	34	40	1B	14
	44	1D	90	72	10	22	34	40	1E	14
	45	1A	8D	6F	E	22	30	48	1E	15
	46	1A	8D	6F	E	20	30	48	20	15
	47	1A	8E	70	E	20	2C	48	20	17
	48	17	8B	6D	D	1E	2C	50	22	17
	49	17	8B	6D	D	1E	29	50	22	19
	4A	17	8C	6E	D	1C	29	50	25	19
	4B	15	89	6B	C	1A	29	58	27	19
	4C	15	8A	6C	C	1A	26	58	27	1B
	4D	15	8A	6C	C	19	26	58	29	1B
	4E	13	88	6A	B	19	24	60	29	1C
	4F	13	88	6A	B	18	24	60	2B	1C
	50	13	89	6B	B	18	22	60	2B	1E
	51	12	87	69	A	16	22	68	2E	1E
	52	12	87	69	A	16	20	68	2E	20
	53	12	88	6A	A	15	20	68	30	20
	54	10	86	68	9	15	1E	70	30	22
	55	10	86	68	9	14	1E	70	32	22
2F	3F	26	9A	7C	15	26	40	30	1B	10
	40	21	95	77	12	23	40	38	1D	10
	41	21	95	77	12	23	3A	38	1D	12
	42	21	96	78	12	20	3A	38	20	12
	43	1D	91	73	10	20	34	40	20	14
	44	1D	92	74	10	1E	34	40	23	14
	45	1A	8F	71	E	1E	30	48	23	15
	46	1A	8F	71	E	1B	30	48	25	15
	47	1A	90	72	E	1B	2C	48	25	17
	48	17	8D	6F	D	1A	2C	50	28	17
	49	17	8D	6F	D	1A	29	50	28	19
	4A	17	8E	70	D	18	29	50	2B	19
	4B	15	8B	6D	C	17	29	58	2D	19
	4C	15	8C	6E	C	17	26	58	2D	1B
	4D	15	8C	6E	C	15	26	58	30	1B
	4E	13	8A	6C	B	15	24	60	30	1C
	4F	13	8A	6C	B	14	24	60	33	1C
	50	13	8B	6D	B	14	22	60	33	1E
	51	12	89	6B	A	13	22	68	35	1E
	52	12	89	6B	A	13	20	68	35	20
	53	12	8A	6C	A	12	20	68	38	20
	54	10	88	6A	9	12	1E	70	38	22
	55	10	88	6A	9	11	1E	70	3B	22
30	3F	26	9C	7E	15	26	39	30	1B	12
	40	21	97	79	12	23	39	38	1D	12
	41	21	97	79	12	23	33	38	1D	14
	42	21	98	7A	12	20	33	38	20	14
	43	1D	93	75	10	20	2F	40	20	16
	44	1D	94	76	10	1E	2F	40	23	16
	45	1A	91	73	E	1E	2B	48	23	18
	46	1A	91	73	E	1B	2B	48	25	18
	47	1A	92	74	E	1B	27	48	25	1A
	48	17	8F	71	D	1A	27	50	28	1A
	49	17	8F	71	D	1A	25	50	28	1C
	4A	17	90	72	D	18	25	50	2B	1C
	4B	15	8D	6F	C	17	25	58	2D	1C
	4C	15	8E	70	C	17	22	58	2D	1E
	4D	15	8E	70	C	15	22	58	30	1E
	4E	13	8C	6E	B	15	20	60	30	20
	4F	13	8C	6E	B	14	20	60	33	20
	50	13	8D	6F	B	14	1E	60	33	22
	51	12	8B	6D	A	13	1E	68	35	22
	52	12	8B	6D	A	13	1C	68	35	24
	53	12	8C	6E	A	12	1C	68	38	24
	54	10	8A	6C	9	12	1B	70	38	26
	55	10	8A	6C	9	11	1B	70	3B	26

Table 7-9. (2)

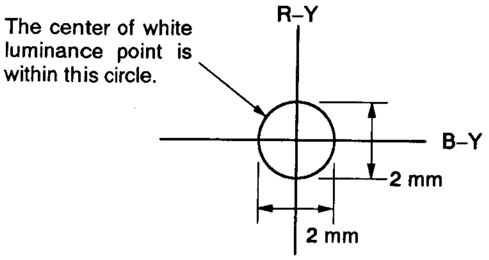
7-2-30. Auto White Balance Check (VC-84 Board)

Subject	White pattern standard picture frame
Filter	Filter C14 for color temperature correction
Measurement Point	When vectorscope used: VIDEO output terminal When oscilloscope used: CH1 (X): emitter of Q257 (B–Y) CH2 (Y): emitter of Q255 (R–Y)
Measuring Instrument	
Specified Value	See Fig. 7-37.

Checking method:

1) Select adjustment address 75 with the adjustment remote controller and enter adjustment data of F0. (Auto white balance tracking zone invalidity/all area discrimination mode setting)
2) Change the adjustment address to store the adjustment data in the memory.
3) Remove the jumper wire between Pin (B6) of the check point array and the ground.
   (Set the EVR adjustment mode to OFF.)
4) Confirm that the white luminance point matches with the origin (or the black luminance point) when shooting the white pattern without the C14 filter.
5) Cover the lens with the C14 filter and confirm that the white luminance point matches with the origin (or the black luminance point) in about 2 seconds.
6) Connect Pin (B6) of the check point array to the ground with the jumper wire.
   (Set the EVR adjustment mode to ON.)
7) Select the adjustment address 75 with the adjustment remote controller and the adjustment data of 00.
   (Release auto white balance check mode)
8) Change the adjustment address to store the adjustment data in the memory.

[When using vectorscope]



[When using oscilloscope]

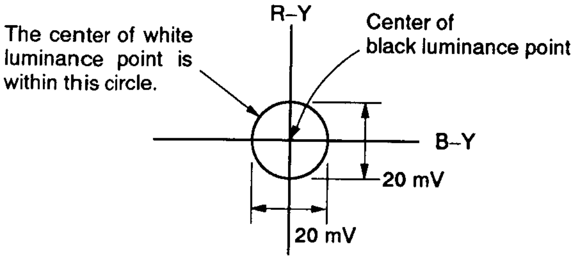

The center of white luminance point is within this circle.
R–Y
Center of black luminance point
B–Y
20 mV
20 mV

Fig. 7-37.

7-2-31. Focus Motor Speed Adjustment (VC-84 Board)

Subject	Arbitrary
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	24 (FOCUS SPEED)
Specified Value	Average value of data indicated on jig=7.0 ± 0.5

Remarks: The rotation time from the close extreme to far extreme of the focus ring should be approximately 2 seconds after completion of adjustment.

Adjusting method:

1) Set the auto focus to ON.
2) Select adjustment address 25 with the adjustment remote controller and enter adjustment data of 01.
   (Sets hunching mode)
3) Set the adjustment address to 24.
4) Change the adjustment data so that the indication on the AF microprocessor data reading jig is 07 while the ring is rotating.
5) Press the HOLD button of the AF microprocessor data reading jig while the focus ring is rotating to read the indication value.
6) Repeat step 5) ten times and obtain the average value.
   Specified value=7.0 ± 0.5
   Repeat steps 4) and 5) if the specified value is not satisfied.
7) Set the adjustment address to 25 and set the adjustment data to 00. (Releases hunching mode)
8) Change the adjustment address to store the adjustment data in the memory.

7-2-32. Macro Area Adjustment (VC-84 Board)

Subject	Arbitrary
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	27 (MACRO)
Specified Value	(Value at zoom ring WIDE position) -1

Adjusting method:

1) Press the WIDE side of the zoom button and set the zoom ring to the WIDE position.
2) Select adjustment address 25 with the adjustment remote controller and set the adjustment data to 03. (Sets zoom position indication mode)
3) Read the data indicated on the AF microprocessor data reading jig. (Data in the range of 06 to 0F is displayed if normal.)
4) Change the adjustment address to 27.
5) Subtract 1 from the data read from the jig and enter as the adjustment data. (See Table 7-5. Hexadecimal — decimal conversion table)
6) Change the adjustment address to 25 and set the adjustment data to 00. (Releases zoom position indication mode)
7) Change the adjustment address to store the adjustment data in the memory.

7-2-33. Auto Focus Adjustment (VC-84 Board)

1. Adjustment in all black pattern

Subject	All black (cover lens with black cap)
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	33 (FHB), 35 (AGC B)

Adjusting method:

1) Set the auto focus to OFF with the focus button.
2) Select adjustment address 25 with the adjustment remote controller and set the adjustment data to FF.
   (Set the auto focus filter to FH)
3) Read the data indicated on the AF microprocessor data reading jig (FH B) and enter adjustment address 33. (FH B will be 00 to 06.)
4) Select adjustment address 25 and set the adjustment data to FD. (Set the auto focus filter to FA position.)
5) Confirm the data indicated the AF microprocessor data reading jig (FA B) is 00 to 11.
6) Select adjustment address 25 and set the adjustment data to 0B. (Auto focus AGC adjustment mode)
7) Read the data indicated on the AF microprocessor data reading jig (AGC B) and enter adjustment address 35.
8) Perform "Adjustment in all white pattern".

2. Adjustment in all white pattern

Subject	All white pattern[Note]
Measurement Point	CN304
Measuring Instrument	AF microprocessor data reading jig
Adjustment Address	32 (FHW), 34 (AGC W)

Note: Place the pattern box without chart in the front of the camera. Set the zoom lever to TELE position and shoots the pattern box.

Adjusting method:

1) Select adjustment address 25 with the adjustment remote controller and enter adjustment data of FF.
2) Read the data (FH W) indicated on the AF microprocessor data reading jig and enter adjustment address 32. (FH W should be 00 or 01.)
3) Select adjustment address 25 and set the adjustment data to FD.
4) Confirm that the data (FA W) indicated on the AF microprocessor data reading jig is 00 to 03.
5) Select adjustment address 25 and set the adjustment data to 0B.
6) Read the data (AGC W) indicated on the AF microprocessor data reading jig and enter adjustment address 34.
7) Select adjustment address 25 and enter adjustment data of 00.
8) Change the adjustment address to store the adjustment data in the memory.

7-2-34. Auto Focus Check

Note: Perform adjustment with the EVF (electronic viewfinder) attached.

Subject .	Siemens star (position 1.5 m from the front of the lens reference plane (CCD imager))

Measuring method:

1) Place the Siemens star 1.5 m from the front of the lens reference plane (See Fig. 7-2.).
2) Set the zoom to the TELE position and set the auto focus to ON with FOCUS button.
3) Adjust the position of the camera so that center of the Siemens star is lined up with the center of the monitor screen on the monitor TV screen.
4) To open the iris, decrease the illumination of the Siemens star chart to the range in which the normal image without the noise can be obtained.
   (Or cover lens with the ND filter.)
5) Set the auto-focus to OFF with FOCUS button.
6) Manually rotate the focus ring to set the focus. Confirm that the focus mark is inside the range shown in Fig. 7-38. at this time.
   Perform "Flange Back Adjustment" if the specification is not satisfied.
7) Turn the focus ring to the close extreme (1.1 m).
8) Set the auto-focus to ON with FOCUS button.
9) Confirm that there is focusing within two seconds and a sharp image can be obtained.
10) Set the auto-focus to OFF and turn the focus ring to the far extreme (∞).
11) Set the auto-focus to ON.
12) Confirm that there is focusing within three seconds and a sharp image can be obtained.

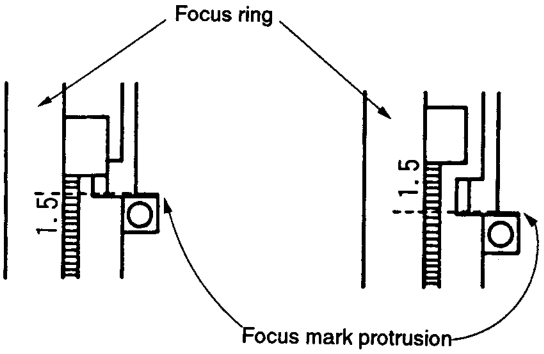


Fig. 7-37.

7-2-35. Power Zoom Speed Adjustment

Subject	Arbitrary
Measuring Instrument	Stop watch
Adjustment Address	22 (ZOOM L SPD) 23 (ZOOM H SPD)
Specified Value	Low speed: 10.0 ± 2.5 sec. High speed: 5.5 ± 1.3 sec.

Note: 1) In the adjustment mode, the zoom button of the remote commander does not function.
2) Perform adjustment in both low and high speed.

Adjusting method:

1) Check that the adjustment data of adjustment address 22 is around 32 and that the adjustment data of adjustment address 23 is around 4F.
2) Set the zoom to the TELE-end position.
3) Press the WIDE side of the zoom button lightly (in low speed) or strong (in high speed) and measure how long it takes to rotate from TELE-end to WIDE-end.
4) Set the zoom to the WIDE-end position.
5) Press the TELE side of the zoom button lightly (in low speed) or strong (in high speed) and measure how long it takes to rotate from WIDE-end to TELE-end.
6) If the specified value is not obtained in the step 3) or 5), change the adjustment address 22 (in low speed) or 23 (in high speed) with the adjustment remote controller and repeat steps 2) through 5).

Note: If the adjustment data is too small, the zoom motor will not rotate.

Adjustment data	Zoom speed
Large	Fast
↕	↕
Small	Slow

Table 7-10.

7-3. CAMERA REC SYSTEM ADJUSTMENTS

7-3-1. VCO Adjustment (VC-84 Board)

Subject	Arbitrary
Measurement Point	Pin ⑦ of IC141
Measuring Instrument	Digital voltmeter
Adjusting Element	CT141
Specified Value	2.8 ± 0.2 Vdc

Adjusting method:

1) Set to 2.8 ± 0.2 Vdc with CT141.

7-3-2. Chroma Input Level Adjustment (VC-84 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin ① of IC503
Measuring Instrument	Oscilloscope
Adjusting Element	RV501
Specified Value	420 ± 20 mVp-p

Adjusting method:

1) Adjust the burst signal level to 420 ± 20 mVp-p using RV501.

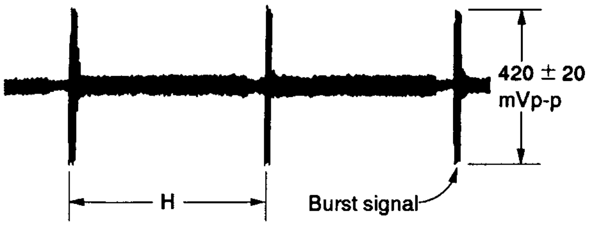


Fig. 7-39. Chroma input level adjustment

7-3-3. Recording Chroma RF Level Adjustment (VC-84 Board)

Subject	All black (cover lens with black cap)
Mode	Camera recording
Measurement Point	TP212 (emitter of Q241) on VS-72 board check land
Measuring Instrument	Oscilloscope
Adjusting Element	RV504
Specified Value	250 ± 10 mVp-p

Adjusting method:

1) Adjust the burst signal level to 250 ± 10 mVp-p using RV504.

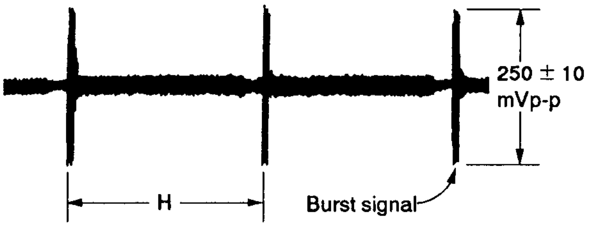


Fig. 7-40. Recording chroma RF level adjustment

7-3-4. Y FM Carrier Frequency Adjustment (VC-84 Board)

Subject	Arbitary
Mode	Camera recording
Measurement Point	TP161 (emitter of Q237) on VS-72 board check land
Measuring Instrument	Frequency counter
Adjusting Element	RV502
Specified Value	4.29 ± 0.04 MHz

Connections:

1) Connect the Pin (A8) (CAM Y) of the check point array to Pin ④ (CAM 5V) of W801 with a jumper wire.

Adjusting method:

1) Adjust to 4.29 ± 0.04 MHz with RV502.
2) Be sure to perform deviation adjustment.

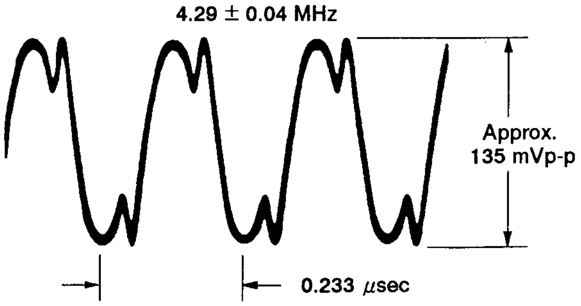


Fig. 7-41. Y FM carrier frequency adjustment

7-3-5. Y FM Deviation Adjustment (VC-84 Board)

Subject	All black (cover lens with black cap)
Mode	Camera recording and playback
Signal	All black signal recorded with the camera. Alignment tape for operation check (WR5-4CSP) Color bar section
Measurement Point	VIDEO output terminal
Measuring Instrument	Oscilloscope
Adjusting Element	RV503
Specified Value	(Horizontal sync signal level of alignment tape) ± 0.015V

Note: 1) Confirm that "PB Y Level 1 Adjustment", "PB Y Level 2 Adjustment" and "Y FM Carrier Frequency Adjustment" of the video block adjustment should be completed.
2) Terminate the VIDEO output terminal (J901) at 75Ω .

Adjusting method:
1) Play the color bar section of the alignment tape (WR5-4CSP) and make a note of the horizontal sync signal level (approx. 0.3V) at this time.
2) Record the all black subject with the camera.
3) Play back the tape recorded in step 2).
4) Confirm that the horizontal sync signal level at this time is the same as the level noted in step 1).
Specified value:
(Horizontal sync signal level of alignment tape) ± 0.015V
5) If the specified value is not satisfied, repeat 2) to 4) after turning RV503 in the following manner.

	Rotation direction of RV503
When smaller than specified value	Counterclockwise (↺)
When larger than specified value	Clockwise (↻)

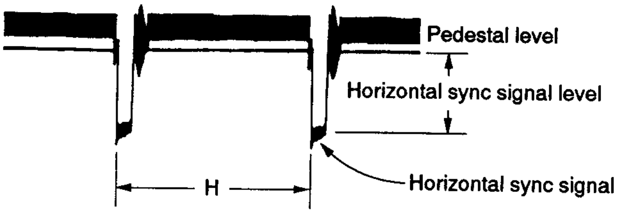


Fig. 7-42. Y FM deviation adjustment

7-3-6. REC Y Level Adjustment (VC-84 Board)

Subject	All black (cover lens with black cap)
Mode	Camera recording
Measurement Point	TP161 (emitter of Q237) on VS-72 board check land
Measuring Instrument	Oscilloscope
Adjusting Element	RV505
Specified Value	135 ± 10 mVp-p

Adjusting method:
1) Adjust RV505 to 135 ± 10 mVp-p.

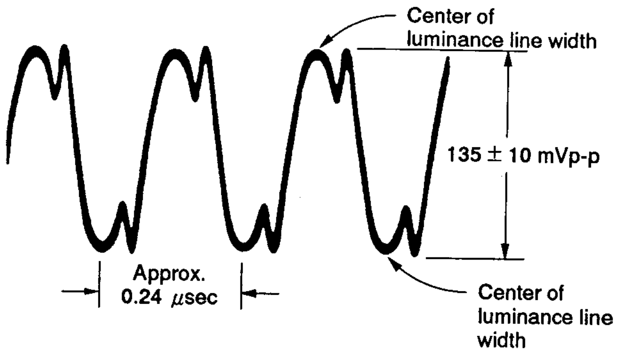

Center of luminance line width
135 ± 10 mVp-p
Approx. 0.24 μsec
Center of luminance line width

Fig. 7-43. REC Y level adjustment

7-4. DIGITAL TITLER SYSTEM ADJUSTMENTS

7-4-1. Titler PLL Adjustment (TI-31 Board)

Subject	Arbitrary
Measurement Point	TP804$^{\text{Note}}$
Measuring Instrument	Digital voltmeter
Adjusting Element	CT801
Specified Value	2.42 ± 0.1 Vdc

Note: RB801 side terminal of C808.

Connection:

1) Connect TP801 (PLL ADJ: Pin (64) of IC803) TP803 (VDD) with a jumper wire.

Adjusting method:

1) Adjust CT801 to 2.42 ± 0.1 Vdc.

7-4-2. Character Generator f_o Adjustment (TI-31 Board)

Subject	E-E
Mode	No signal
Measurement Point	Pin ⑦ of IC802 (TP806)
Measuring Instrument	Frequency counter
Adjusting Element	CT802
Specified Value	6.38 ± 0.05 MHz

Connection:

1) Connect TP805 (Pin ⑳ of IC802 and TP803 (VDD) with a jumper wire.

Adjusting method:

1) Adjust CT802 to 6.38 ± 0.05 MHz.

7-4-3. Title A/D Level Adjustment

Subject	Color bar chart standard picture frame
Measurement Point	Confirmed on monitor TV
Measuring Instrument	
Adjustment Address	21 (TITLE A/D)
Specified Value	See Fig. 7-44.

Note: 1) Make sure that "Y Level Adjustment" is completed.
2) Turn on the superimpose button (S759 on CF-0 board).

Adjusting method:

1) Select adjustment address 21 with the adjustment remote controller.
2) Press the MEMORY button (S760 on CF-0 board).
3) Confirm that blue and black portions are superimposed and become white, and confirm that red and magenta portions are not changed.
4) If this condition is not satisfied, change the adjustment data with the adjustment remote controller and repeat steps 2) and 3).
5) Change the adjustment address to store the adjustment data in the memory.

The shaded portion should be turned to white.

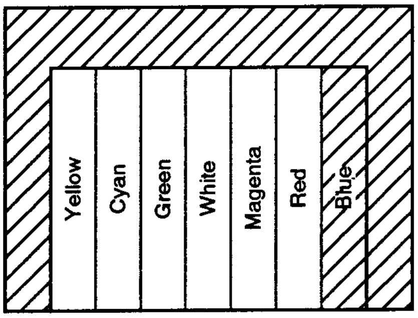


Fig. 7-44.

7-4-4. Title Y Level Adjustment (VC-84 Board)

Subject	All black (cover lens with black cap)
Measurement Point	Pin (A8) (CAM Y) of check point array
Measuring Instrument	Oscilloscope
Adjustment Address	0A (TITLE Y)
Specified Value	570 ± 80 mV

Note: Connect the EVF (electronic viewfinder) for adjustment.

Adjusting method:

1) Cover the lens with the black cap and press the MEMORY button (S760 on CF-0 board).
2) Confirm that "WHITE" characters are displayed in the EVF.
3) Select adjustment address 0A with the adjustment remote controller.
4) Change the adjustment data with the adjustment remote controller to set the Y signal level to 570 ± 80 mV.
5) Change the adjustment address to store the adjustment data in the memory.

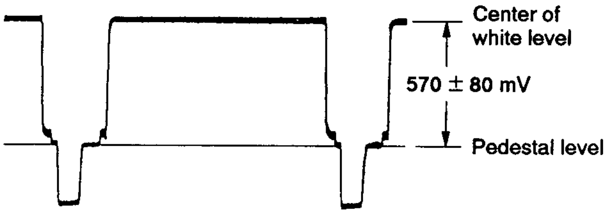

Center of white level
570 ± 80 mV
Pedestal level

Fig. 7-45.

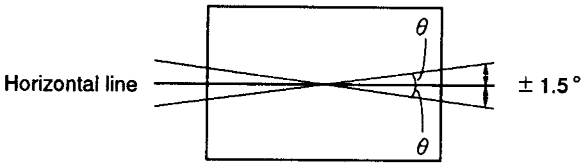
7-5. ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

7-5-1. Horizontal Tilt Adjustment

Mode	Playback
Signal	Alignment tape for operation check (WR5-4CSP) Monoscope portion
Specified Value	See Fig. 7-46.

Adjusting method:

1) Adjust optimum brightness on the CRT with RV954 (BRIGHT).
2) Loosen the DY (deflection yoke) tightening nut.
3) Make the picture horizontal by rotating DY.
4) Retighten the DY tightening nut.
   (Do not tighten excessively.)


θ
Horizontal line
± 1.5 °
θ

Specified value: Image orientation to be within ± 1.5 ° of horizontal line.

Fig. 7-46.

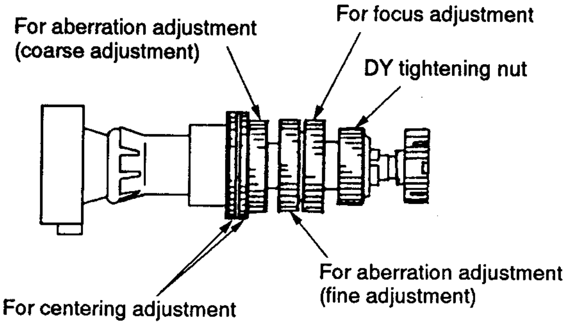

For aberration adjustment (coarse adjustment)
For focus adjustment
DY tightening nut
For centering adjustment
For aberration adjustment (fine adjustment)

Fig. 7-47.

7-5-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape for operation check (WR5-4CSP) Monoscope portion
Specified Value	See Fig. 7-48.

Adjusting method:

1) Turn the centering adjustment rings to make the margin even at right, left, upper and lower of the screen. (See Fig. 7-47.)

Note: Since the centering position is affected by the earth magnetism, turn the equipment over 360 ° horizontally, and make adjustments at the orientation that exhibits median displacements of the image.

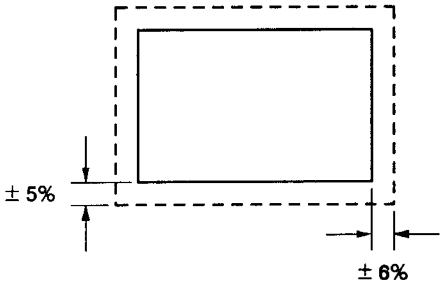


Fig. 7-48.

7-5-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape for operation check (WR5-4CSP) Monoscope portion

Adjusting method:

1) Adjust for optimum focus using the focus ring. (See Fig. 7-47.)

7-5-4. Aberration Adjustment

Mode	E-E
Signal	Dot pattern
Specified Value	See Fig. 7-49.

Adjusting method:

1) Use the aberration adjustment rings to adjust any trailing dots to under 2 times the dot diameter and any fan shaped aberrations to within the dot diameter.
2) If off center, repeat the "Centering Adjustment".

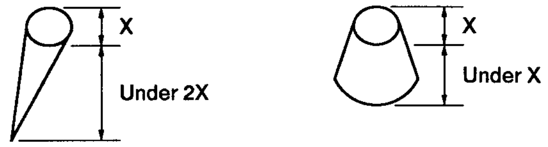


Fig. 7-49.

7-5-5. Horizontal Oscillation Frequency Adjustment (VF-40 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-4CSP)
Measurement Point	Positive terminal of C954
Measuring Instrument	Digital voltmeter or oscilloscope (DC range)
Adjusting Element	RV951
Specified Value	2.60 ± 0.05 Vdc

Adjusting method:

1) Adjust RV951 to 2.60 ± 0.05 Vdc.

7-5-6. Horizontal Amplitude Adjustment (VF-40 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-4CSP) Monoscope portion
Adjusting Element	C961
Specified Value	6 ± 3%

Adjusting method:

1) By turning RV952, align upper and lower edges of the monoscope image with those of the screen.
2) By turning RV954, attain a normal brightness level.
3) To achieve 6 ± 3% horizontal overscans (right and left total), short-circuit or open the pattern (A) for H size adjusting capacitor (C961). (See Fig. 7-51.)

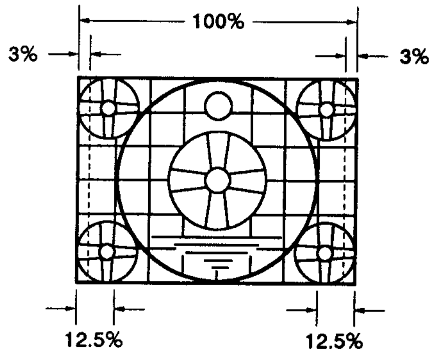
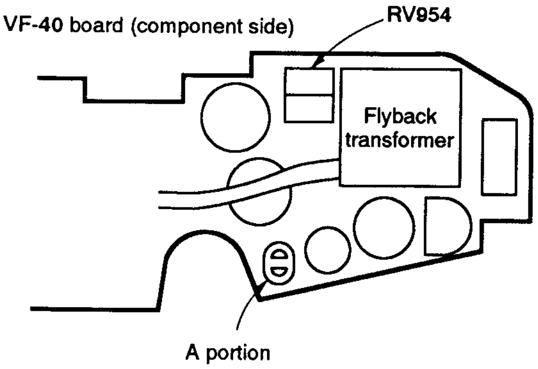


Fig. 7-50.



A section	H size
Open	Small
Short	Large

Fig. 7-51.

7-5-7. Vertical Amplitude Adjustment (VF-40 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-4CSP) Monoscope portion
Adjusting Element	RV952
Specified Value	5 ± 3%

Adjusting method:

1) By turning RV952, adjust for 5 ± 3% (upper and lower total) vertical overscan.

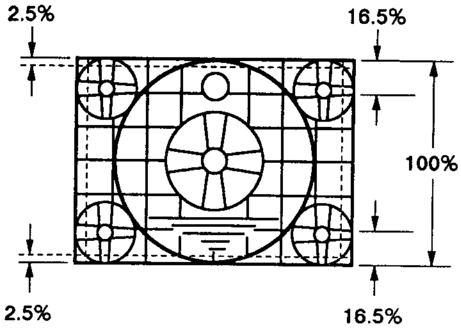


Fig. 7-52.

7-5-8. Brightness, Contrast Adjustments (VF-40 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-4CSP) Monoscope portion
Adjusting Element	Brightness: RV954 Contrast: RV953

Adjusting method:

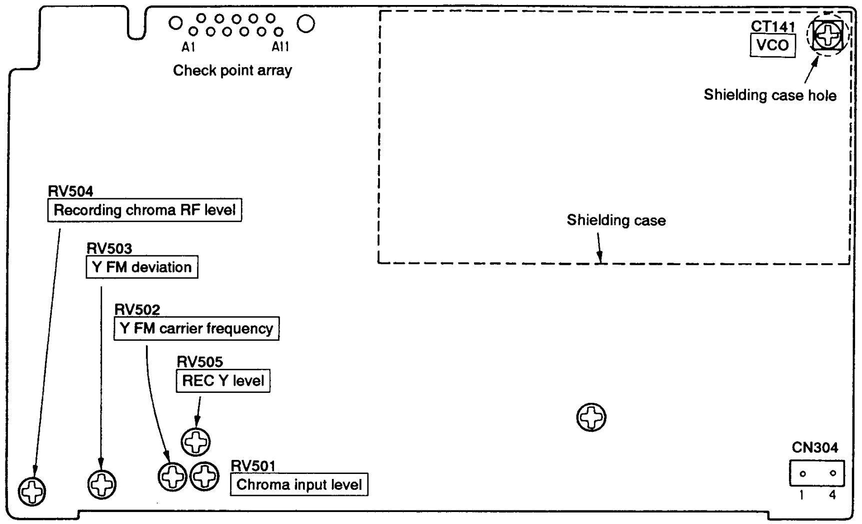
1) Turn RV954 and RV953 alternately until the bright and dark areas of a gray scale are displayed correctly. (The bright areas should not be made too bright to avoid a fuzzy display of the cross-hatches in the monoscope circle, and the brightness of the dark areas should be such that discrimination between the darkest and second darkest area is possible.)

7-5-9. Horizontal Amplitude, Vertical Amplitude and Focus Checks

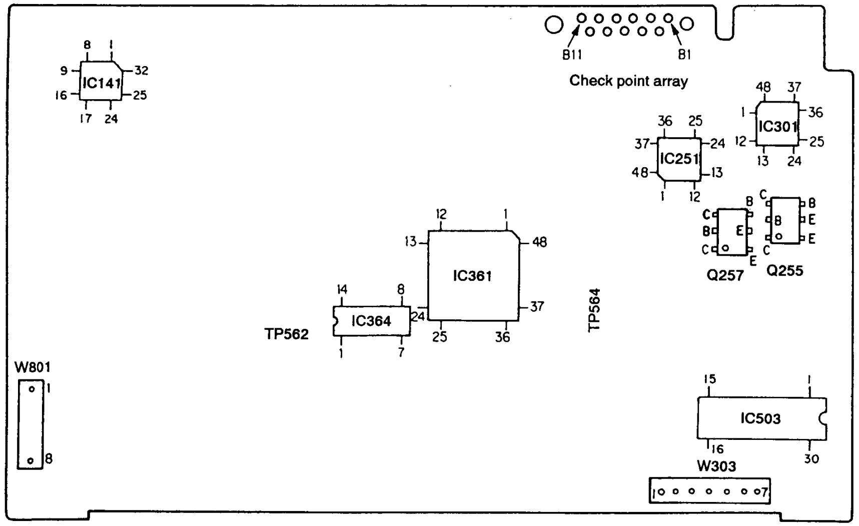
Values should conform to specifications given in "7-5-6. Horizontal Amplitude Adjustment" and "7-5-7. Vertical Amplitude Adjustment". If not, readjust accordingly, and repeat "7-5-8. Brightness, Contrast Adjustments". In this case, focus needs to be checked. If the image is not clear, perform "7-5-3. Focus Adjustment" and "7-5-4. Aberration Adjustment".

7-6. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

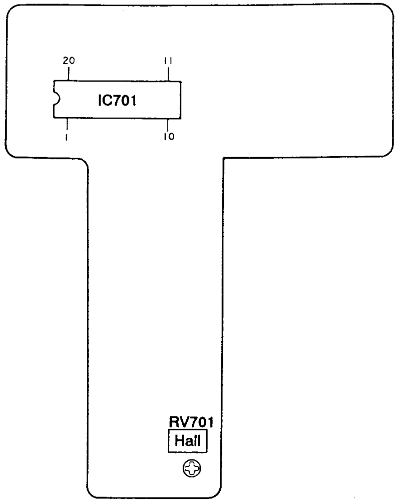
VC-84 BOARD (COMPONENT SIDE)
(Also illustrated on page 268.)


A1
A11
Check point array
CT141
VCO
Shielding case hole
Shielding case
RV504
Recording chroma RF level
RV503
Y FM deviation
RV502
Y FM carrier frequency
RV505
REC Y level
RV501
Chroma input level
CN304
1
4

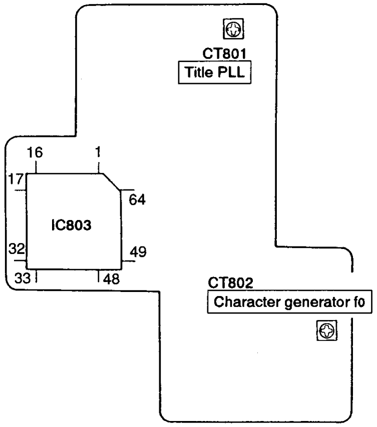
VC-84 BOARD (CONDUCTOR SIDE)
(Also illustrated on page 268.)


B11
B1
Check point array
IC141
IC301
IC251
IC361
IC364
IC503
Q257
Q255
TP562
TP564
W801
W303

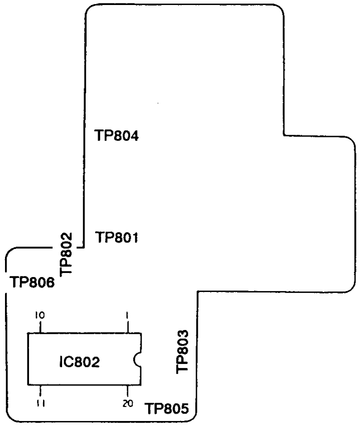
LD-36 BOARD (CONDUCTOR SIDE)


IC701
RV701
Hall

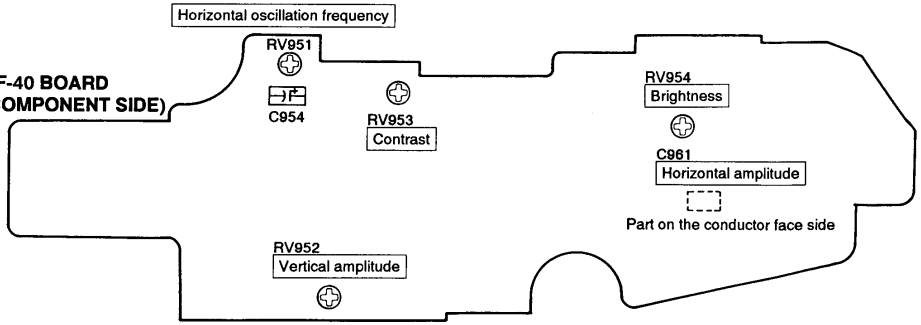
TI-31 BOARD (COMPONENT SIDE)


CT801
Title PLL
IC803
CT802
Character generator f0

TI-31 BOARD (CONDUCTOR SIDE)


TP804
TP801
TP802
TP806
IC802
TP803
TP805

VF-40 BOARD (COMPONENT SIDE)


Horizontal oscillation frequency
RV951
C954
RV953
Contrast
RV952
Vertical amplitude
RV954
Brightness
C961
Horizontal amplitude
Part on the conductor face side

SECTION 8
MECHANICAL ADJUSTMENT

MECHANICAL ADJUSTMENT

As to the mechanical adjustment and check and parts replacement, refer to the separate "8 mm Video Mechanical Adjustment Manual II FL mechanism (Q mechanism).
However, follow these items shown below.

8-1. OPERATING WITH THE CASSETTE COMPARTMENT ASSEMBLY REMOVED (See Fig. 8-1.)

1. Loading

1) Remove the cabinets and camera block according to the "section 2. DISASSEMBLY", and supply the power to the unit. (Set up the mechanism deck so as to operate.)
2) Push into the lock plate release arm ❶ in the direction of arrow, causing the unit to be the loading state.

2. Putting into the playback state

1) Short circuit Pins ③ and ⑧ of CN204 on the VS-72 board to set to the TEST mode.
(In the TEST mode, the rotation detecting, etc. of the S and T reel tables is ceased. This enables the tape traveling.)
2) After completing the step 1), set the power switch to VTR.
3) Put the cap ❸ on the LED assembly ❷.
4) Push into the lock plate release arm ❶ to load.
5) Press the playback button.

The adjustment and the marks remain the same except this model has the different drum installed.

A-7049-197-A	Rotary upper drum assembly DGR-37-R-(1)
A-7049-198-A	Rotary upper drum assembly DGR-37-R-(2)

3. Putting into the recording state

1) Perform the step 1) through 4) of 2. Putting into the playback state.
2) Secure the push switch ❹ with an adhesive tape ❺.
3) Turn on the REC switch.

4. Ejecting

1) Push the EJECT button.

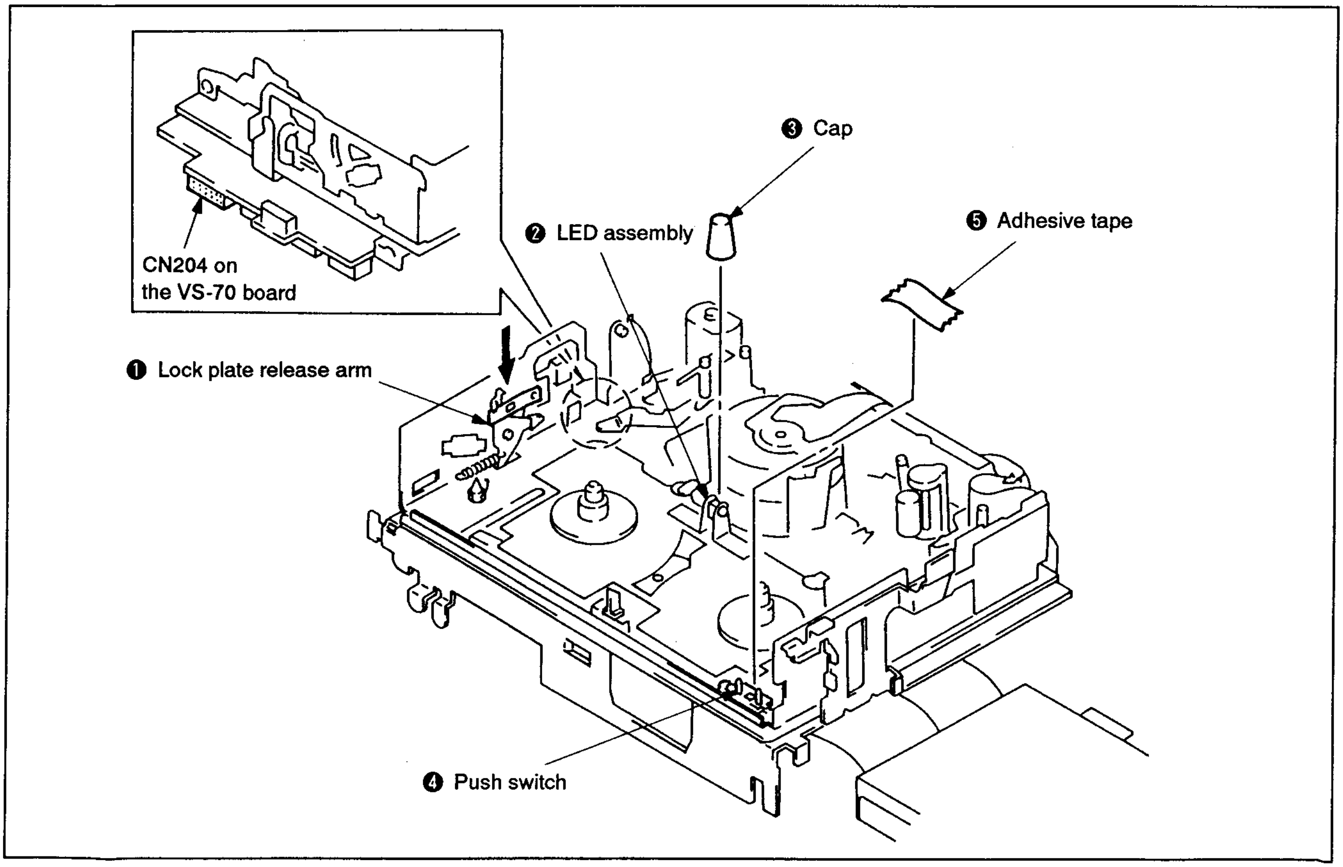


Fig. 8-1.

8-2. TAPE PATH ADJUSTMENT

1. Preparations

1) Clean the tape pass surface (tape guide, drum, capstan shaft and pinch roller).
2) Short circuit Pins ③ and ⑦ of CN204 on the VS-72 board to set to the PATH mode.
3) Connect to an oscilloscope.
   Channel 1 — Pin ① of CN204 on the VS-72 board
   External trigger — Pin ④ of CN204 on the VS-72 board
4) Play back the tracking alignment tape (WR5-1CP).
5) Confirm that the RF waveforms at both sides of the entrance and exit on the oscilloscope are flat.
   If not, perform adjustment according to the following.

CN204 on the VS-72 board

1	PB RF CH1
2	PB RF CH2
3	PB RF GND
4	RF SWP
5	UN (1/2 RF SWP)
6	UN (REC C CHECK)
7	UN (PATH)
8	UN (TEST)
9	UN (CAM ADJ)
10	UN (SP)/LP
11	DRUM I COM
12	CAP FG

SECTION 9
VIDEO BLOCK ADJUSTMENTS

During the adjustment, see the arrangement diagram for adjustment parts from page 310.

9-1. PRE-ADJUSTMENT PREPARATIONS (VIDEO BLOCK)

Use the following measuring instruments for adjustment of the VTR block.

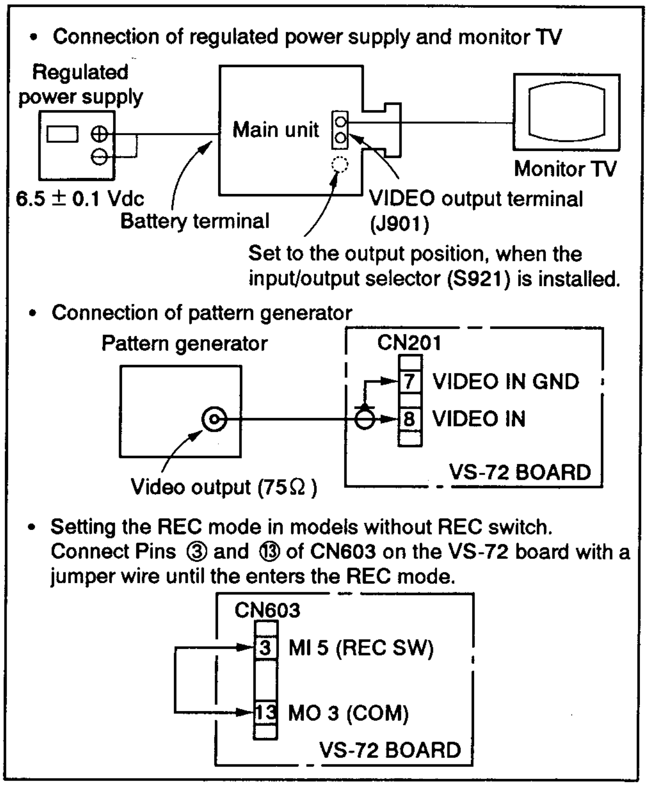
9-1-1. Equipment to be Used

1) Monitor TV
2) Dual trace oscilloscope of over 10 MHz band, incorporates delay mode. (Use 10 : 1 probe unless otherwise specified)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Regulated power supply
11) Alignment tapes
    Tracking adjustment (WR5-1CP)*1
        Parts Code: 8-967-995-07
    Video frequency characteristics adjustment (WR5-6C)*2
        Parts Code: 8-967-995-17
    Operation check (WR5-4CL)*3
        Parts Code: 8-967-995-56
    Operation check (WR5-5CSP)*4
        Parts Code: 8-967-995-47
    Note:
    *1 WR5-1C (8-967-995-06) is also available.
    *2 WR5-2C (8-967-995-16) is also available.
    *3 WR5-3CL (8-967-995-36) is also available.
    *4 WR5-3CSP (8-967-995-27) and WR5-4CSP (8-967-995-46) are also available.
12) Adjustment remote controller (J-6082-053-A)

9-1-2. Connection of Equipment

Unless otherwise specified, adjustment is made with the measuring instrument connected as shown in the Fig. 9-1. below.

- Camera/video power switch ······· Video position
- Connect the adjustment remote controller to the remote terminal (J902 on the EL-11 board) when performing battery down adjustment.
- The mic board (MA-73 board) is not required for adjustments. Remove the following connector:
  CN402 (3-pin) on the AU-95 board
- When the camera block hinders adjustments, remove the following connectors to separate:
  CN202 (7-pin) on the VS-72 board
  CN802 (16-pin) on the VC-84 board
  CN3 (8-pin) on the DC-DC converter (DD-30 board)
- When the EVF and cabinet (R) hinders adjustments, remove the following connector:
  CN205 (4-pin) on the VS-72 board



- Connection of regulated power supply and monitor TV

Set to the output position, when the input/output selector (S921) is installed.

- Connection of pattern generator

- Setting the REC mode in models without REC switch. Connect Pins ③ and ⑬ of CN603 on the VS-72 board with a jumper wire until the enters the REC mode.

Fig. 9-1.

9-1-3. Set-up During Adjustment

Since the video output signal obtained from the pattern generator is used as the adjusting signal for the VTR block electrical adjustment, it is necessary that this video output signal be within the required specifications. Connect an oscilloscope to Pin ⑧ of CN201 on the VS-72 board and make sure that the amplitude of the video SYNC signal is approximately 0.3V, that the video block amplitude is approximately 0.7V, that the burst signal amplitude is approximately 0.3V with flat characteristics, and the signal level ratio between the burst signal and "Red" signal is 0.30 : 0.66. The video signal (color bars) used for VTR block electrical adjustment are shown in Fig. 9-2.

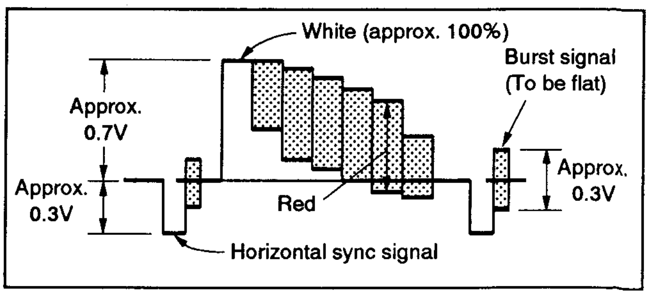


Fig. 9-2. Color bar signal of pattern generator

9-1-4. Alignment Tapes

The following alignment tapes are available.
Use the tape indicated in the signal column; however, in case there is no type indication in the signal column, use any tape for operation check.

Tape	REC mode	Type	Tape speed	Contents		Use
				Video area	PCM area	
Tracking WR5-1CP or WR5-1C	L	MP	SP	CH2: 1 MHz tape path adjustment signal		Tape path adjustment
Video freq. characteristics WR5-6C	L	MP	LP	RF sweep: 0 to 10 MHz Marker: 1, 3.58, 5.5, 7MHz		Frequency characteristics adjustment
Operation check (SP mode) WR5-5CSP or WR5-4CSP	L	MP	SP	• Video signal Color bar: 4 min. Monoscope: 4 min. • Audio signal (AFM) 400 Hz, 60% modulation	• Audio signal (PCM) Monoscope: 20 Hz 20sec 400 Hz 20sec 14 kHz 20sec } Repeat four times. Color bar: 1 kHz 4 min.	Operation check
Operationn check (LP mode) WR5-4CL	L	MP	LP	• Video signal Color bar: 4 min. Monoscope: 4 min. • Audio signal (AFM) 400 Hz, 60% modulation		

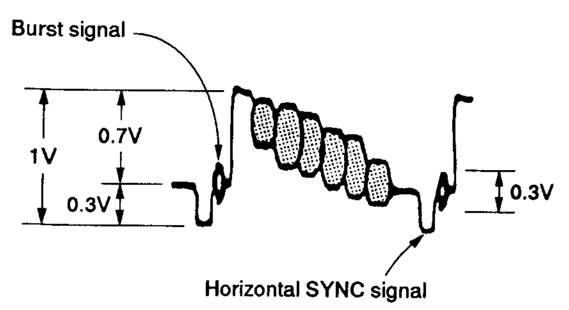
Note: Recording mode
L ········ Conventional mode
E ········ Hi8 (high band) mode

Tape type
MP ········ Particle type metal tape
ME ········ Evaporated type metal tape

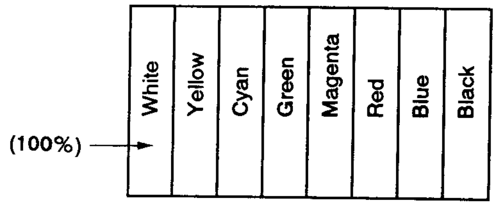
Table 9-1.

75% color bar signal recorded on an alignment tape is shown in Fig. 9-3.

Note: Measured at VIDEO output terminal. (75Ω termination)



Color bar signal waveform



Color bar pattern

Fig. 9-3. Alignment tape color bar signal

9-1-5. I/O Level and Impedance

1. E, Australian model

[I/O level and impedance]

Video input/output phone jack
Input signal: 1 Vp-p, 75Ω unbalanced, negative sync
Audio input/output phone jack
Input level: −7.5 dBs (0 dBs=0.775 Vrms)
Input impedance: More than 47 kΩ
Output level: −7.5 dBs
(at output impedance 47kΩ)
Output impedance: More than 2.2 kΩ

2. AEP, UK model

[Output level and impedance]

Video output phone jack
Output signal: 1 Vp-p, 75Ω unbalanced, negative sync
Audio output phone jack
Specified output: −7.5 dBs
Output impedance: More than 2.2 kΩ

9-1-6. Service Modes

This unit is equipped with service modes for adjustment and operation checking.

There are the following two service modes and switching between them is made by connection between GND and Pin (B6) of the check point array CPA001 on the VC-84 board.

Service Mode	Function	Connection between GND and Pin (B6) of the check point array
Status indication mode	For video block adjustment, operation checking	Open (no connection)
EVR adjustment mode	For adjustment of camera block	Shorted

Refer to "Camera Block Adjustment" for details on the EVR adjustment mode.

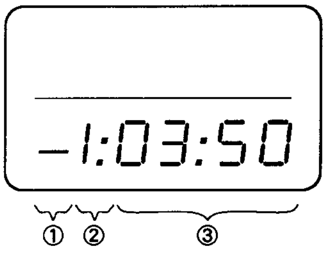
1. Invoking service mode

1) Connect the adjustment remote controller to the remote terminal (J902 on EL-11board) of the main unit.
2) Set HOLD switch of the adjustment remote controller to the HOLD position (SERVICE position).

The status indication mode is invoked by the above operation. (To select the EVR adjustment mode, connect between Pin (B6) of the check point array CPA001 and GND with a jumper wire.

2. Indication on adjustment remote controller LCD in the status indication mode

Note: In categories 1 through 5, the same information is displayed on the EVF screen.



①......Minus segment flashes to indicate that the service mode has been invoked.

②......Indicates service mode category.

③......Indicates battery voltage, LAST EMG, PRESET EMG, MODE SW CODE, or DEW MODE according to current category.

3. Category selection and indication in each category

Select the desired category with FF button of the adjustment remote controller. There are five categories (1 through 5) and the indications are different for each. (Note that the category 0 is the EVR adjustment mode.)

Caategory	Indication on LCD
1	A/D conversion value for battery voltage (decimal indication)[Note 1] 00 : 00 – 02 : 55
2	LAST EMG (last emergency)[Note 2] Refer to Service Mode Error Indications.
3	PRESENT EMG (current emergency)[Note 3] Refer to Service Mode Error Indications.
4	MODE SW CODE (mechanism status) 00 : 01 READY 00 : 02 GL 00 : 03 USE 00 : 04 EJECT 00 : 05 RP(REC, PB, FF, REW, CUE, REVIEW, PAUSE) 00 : 06 LS 00 : 07 BL
5	DEW MODE 00:00 NORMAL 00:01 SENSOR ON DEW MODE (sensor in DEW mode) 00:02 SENSOR OFF DEW MODE (Restart of operation is possible after the following conditions have been satisfied: 1. EJECT 2. More than 1H has elapsed.)

Note: 1) Indicates a value proportional to the battery voltage.
2) LAST EMG indicates the error occurred just before entering the service mode. Even if an error occurs in the service mode, it is not indicated.
3) PRESENT EMG indicates the status when FF button of the adjustment remote controller was pressed. So, the indication does not change even if the error is eliminated.

- **Service mode error indication**

Error Status	PRESENT EMG Indication	LAST EMG Indication
No error	00 : 00	00 : 00
Loading motor	00 : 01	00 : 01
REEL FG error during unthreading	00 : 02	00 : 02
REEL FG error not during unthreading	00 : 03	00 : 03
Capstan error	00 : 04	00 : 04
DRUM FG error (0) when starting drum	00 : 05	00 : 05
DRUM FG error (1) when starting drum	01 : 05	00 : 14
DRUM FG error (2) when starting drum	02 : 06	00 : 15
No DRUM PG (0) when starting drum	00 : 06	00 : 06
No DRUM PG (1) when starting drum	01 : 06	00 : 14
No DRUM PG (2) when starting drum	02 : 06	00 : 15
DRUM FG error (0) when drum stationary	00 : 07	00 : 07
DRUM FG error (1) when drum stationary	01 : 07	00 : 14
DRUM FG error (2) when drum stationary		00 : 15
No DRUM PG (0) when drum stationary	00 : 08	00 : 08
No DRUM PG (1) when drum stationary	01 : 08	00 : 14
No DRUM PG (2) when drum stationary		00 : 15
Phase error (0) when drum stationary	00 : 09	00 : 09

(1) During tape threading
(2) During tape unthreading
(0) Others

4. Releasing the service mode

The service mode can be released by returning HOLD switch of the adjustment remote controller to the NORMAL position or by disconnecting the adjustment remote controller from the remote terminal.

9-2. POWER SUPPLY BLOCK CHECKS

9-2-1. Power Supply Check (VS-72 Board)

Mode	Power ON
Measuring Instrument	Digital voltmeter
VIDEO 5V	
Measurement Point	Pin ② of W605
Specified Value	4.92 ± 0.04V
REG 5V	
Measurement Point	Pin ③ of W605
Specified Value	4.91 ± 0.04V
EVF 5V	
Measurement Point	Pin ① of W605
Specified Value	4.96 ± 0.03V
MOTOR 5.1V	
Measurement Point	Pin ⑩ of CN602
Specified Value	5.1 ± 0.3V

Checking method:

1) Each power supply voltage should meet the corresponding specified value.

9-3. SYSTEM CONTROL ADJUSTMENTS

9-3-1. Battery Down Adjustment (DD-30 Board)

Mode	CAMERA recording
Signal	Arbitrary
Measurement Point	Check on LCD of adjustment remote controller
Measuring Instrument	
Adjusting Element	RV101
Specified Value	Border point of "–1:01:46" and "–1:01:47"

Connections:

1) Connect a regulated power supply and digital voltmeter as shown in Fig. 9-4.
2) Connect Pins ⑧ (UN (TEST)) and ③ (PB RF GND) of CN204 on the VS-72 board with a jumper wire. (TEST mode)

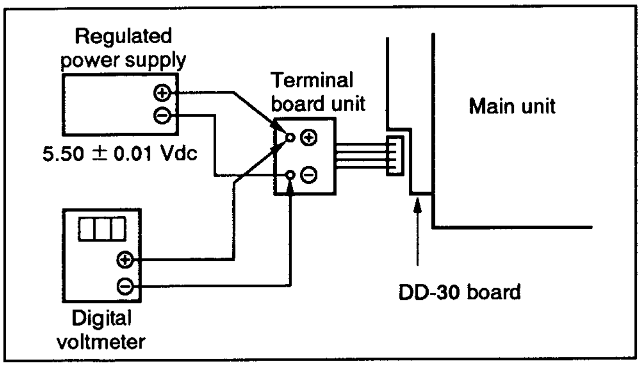

Regulated power supply
⊕
⊖
5.50 ± 0.01 Vdc
Terminal board unit
⊕
⊖
Main unit
DD-30 board
⊕
⊖
Digital voltmeter

Fig. 9-4.

Adjusting method:

1) Connect the adjustment remote controller to the remote terminal (J902 on EL-11 board).
2) Set the power supply switch (S901) on the FK-0 board to CAMERA position to select the camera recording mode.
3) Set HOLD switch of the adjustment remote controller to the HOLD position (service position).
4) Confirm that the indication of the digital voltmeter is 5.50 ± 0.01 Vdc.
5) Set the LCD counter indication on the adjustment remote controller to the switching position between "–1:01:46" and "–1:01:47" using RV101 on the DD-30 board. (refer to Fig. 9-6.)

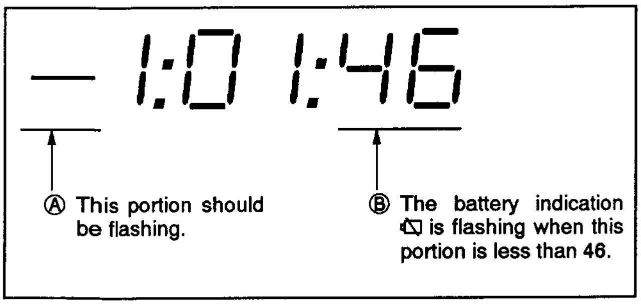

– 1:01:46
Ⓐ This portion should be flashing.
Ⓑ The battery indication 🔋 is flashing when this portion is less than 46.

Fig. 9-5.

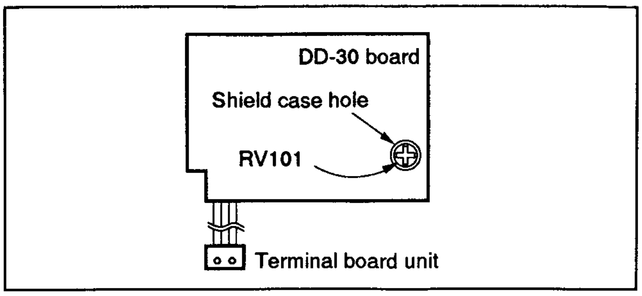

DD-30 board
Shield case hole
RV101
Terminal board unit

Fig. 9-6.

Checking method:

Remove connections 2) and check the following points. If the required conditions are not obtained, repeat the adjustments again.

1) Adjust the output voltage of the regulated power supply so that the digital voltmeter reading becomes 6.00 ± 0.01 Vdc. (VTR in camera recording mode)
2) Confirm that the 🔋 mark is not lit on the EVF (viewfinder) screen (TALLY lamp is lit).
3) Lower the output voltage of the regulated power supply so that the digital voltmeter reading becomes 5.41 ± 0.01 Vdc.
4) Confirm that the LCD counter indication on the adjustment remote controller is "–1:01:43" to "–1:01:46".

9-3-2. System Clock Adjustment (VC-84 Board)

Note: Perform the adjustment without the lens.

Mode	Power ON
Measurement Point	Pin (59) of IC561 or TP562 of check land
Measuring Instrument	Frequency counter
Adjusting Element	RV561
Specified Value	330 ± 5 kHz

Adjusting method:

1) Adjust RV561 for 330 ± 5 kHz.

9-4. SERVO SYSTEM ADJUSTMENTS

9-4-1. Capstan FG Frequency Check (VS-72 Board)

Mode	Recording (SP/LP)
Signal	Arbitrary
Measurement Point	Pin ⑫ (CAP FG) of CN204
Measuring Instrument	Frequency counter
Specified Value	SP mode: 1145.5 ± 1.0 Hz LP mode: 574.7 ± 1.0 Hz

Checking method:

1) Connect Pin ⑧ (UN (TEST)) and Pin ③ (PB RF GND) of CN204 with a jumper wire. (TEST mode)
2) Connect Pin ⑩ of CN204 to ground with a jumper wire or set the EDIT switch to ON position. (Setting of LP mode)
3) Set to the recording mode and confirm that the capstan FG frequency is 574.7 ± 1.0 Hz.
4) Set to the stop mode and remove the jumper wire between Pin ⑩ of CN204 and GND or set the EDIT switch OFF position. (Setting of SP mode)
5) Set to the recording mode and confirm that the capstan FG frequency is 1145.5 ± 1.0 Hz.
6) Remove the jumper wire connected in step 1).

9-4-2. Capstan FG Offset Adjustment (VS-72 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ⑫ (CAP FG) of CN204
Measuring Instrument	Oscilloscope
Adjusting Element	RV502
Specified Value	50 ± 1% duty cycle

Adjusting method:

1) Adjust RV502 so that the CAP FG output waveform duty cycle becomes 50 ± 1%.

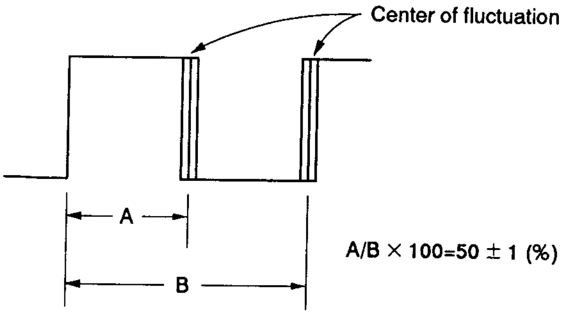


Fig. 9-7. Capstan FG offset adjustment

9-4-3. Drum Phase Lock Check (VS-72 Board)

Mode	Recording (SP)
Signal	Arbitrary
Measurement Point	CH-1: Pin ⑪ (SYSTEM SYNC) of IC601 CH-2: Pin ④ (RF SWP) of CN204
Measuring Instrument	Oscilloscope
Specified Value	224 ± 50 µsec

Checking method:

1) Confirm that duration between the switching point of CH-2 (RF SWP) and the rising edge of CH-1 (SYSTEM SYNC) is 224 ± 50 µsec.

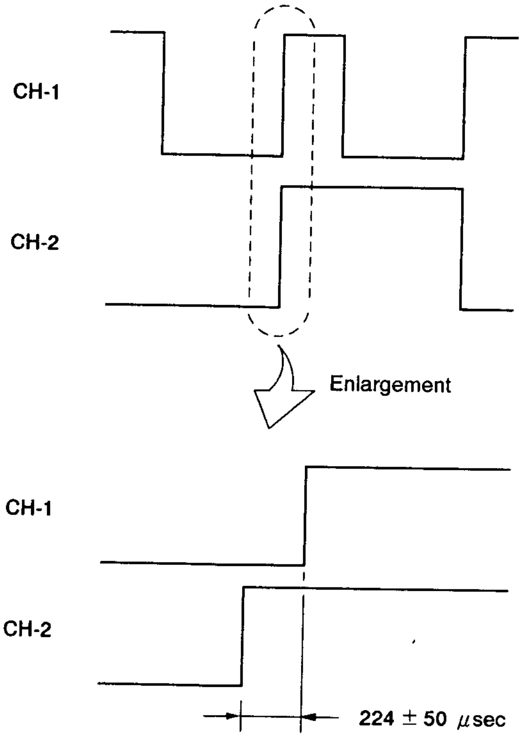


Fig. 9-8. Drum phase lock check

9-4-4. Switching Position Adjustment (VS-72 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP)
Measurement Point	CH-1: VIDEO output terminal CH-2: Pin ④ (RF SWP) of CN204
Measuring Instrument	Oscilloscope
Adjusting Element	RV602
Specified Value	6.5 ± 0.3H (410 ± 20 μsec)

Connections:

1) Connect Pin ⑧ (UN(TEST)) and Pin ③ (PB RF GND) of CN204 using a jumper wire. (TEST mode)
2) In case the cabinet (R) is connected, set EDIT switch in OFF position. (Setting of SP mode)

Adjustment method:

1) Adjust to 6.5 ± 0.3H (410 ± 20 μsec) using RV602.

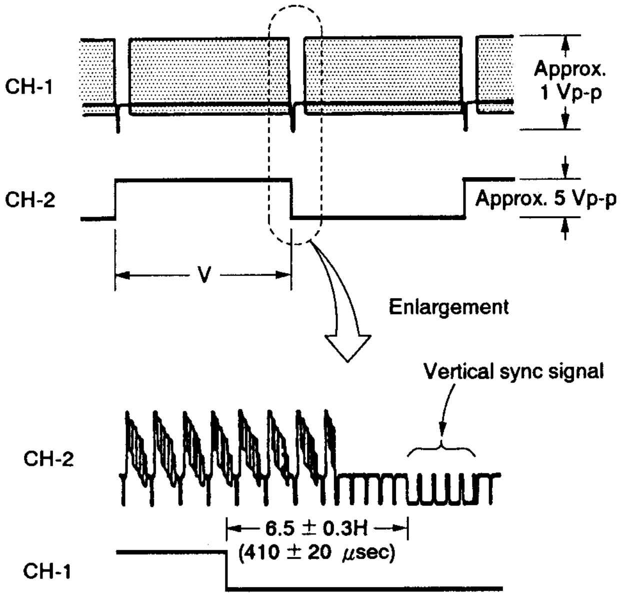


Fig. 9-9. Switching position adjustment

9-5. VIDEO BLOCK ADJUSTMENT

The adjustment of the video system should in principle follow the adjustment procedure outlined below.

The color video signal supplied from the pattern generator is utilized as the video input signal for video system adjustment in the recording mode. Make sure that the sync signal and color burst signal match the specifications given in set-up for adjustment, as shown in Fig. 9-2.

[Adjustment procedure]

1) Playback frequency characteristics adjustment
2) Flying erase check
3) Crystal oscillator fo adjustment
4) Y/C separation adjustment
5) IR2 adjustment
6) SYNC AGC adjustment
7) Emphasis input level adjustment
8) PB Y level 1 adjustment
9) PB Y level 2 adjustment
10) Y FM carrier frequency adjustment
11) Y FM deviation adjustment
12) Chroma emphasis fo adjustment
13) REC C RF level adjustment
14) REC Y level adjustment
15) REC C current adjustment
16) REC ATF current adjustment
17) Feedback chroma adjustment
18) Quasi burst phase adjustment
19) Delay burst phase adjustment

9-5-1. Playback Frequency Characteristics Adjustment (VS-72 Board)

Mode	Playback
Signal	Alignment tape for frequency characteristics adjustment (WR5-6C)
Measurement Point	See Fig. 6-10.
Measuring Instrument	Oscilloscope
Adjusting Element	RV111 (1a) RV113 (1b) RV112 (2a) RV114 (2b)
Specified Value	3.58 MHz level : 5.5 MHz level= 4:(3 ± 0.3)

Adjustment method:

1) Adjust each RV so that the ratio of the 3.58 MHz level to the 5.5 MHz level of the PB RF output waveform becomes 4:(3 ± 0.3) for 1a, 1b, 2a, and 2b respectively.

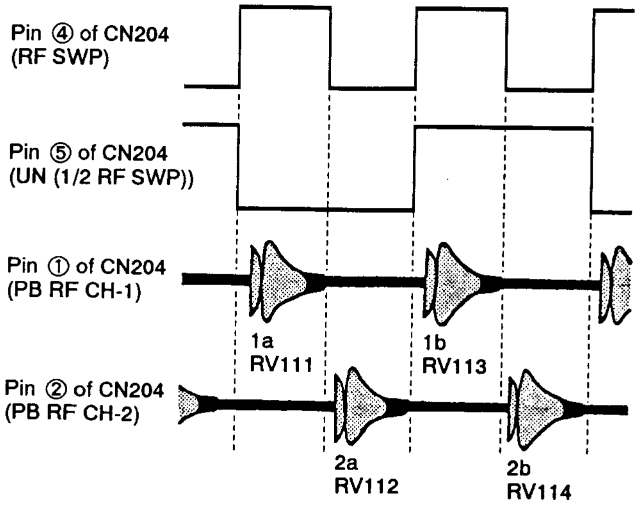

Pin ④ of CN204
(RF SWP)
Pin ⑤ of CN204
(UN (1/2 RF SWP))
Pin ① of CN204
(PB RF CH-1)
1a
RV111
1b
RV113
Pin ② of CN204
(PB RF CH-2)
2a
RV112
2b
RV114

Fig. 9-10. Playback frequency characteristics adjustment

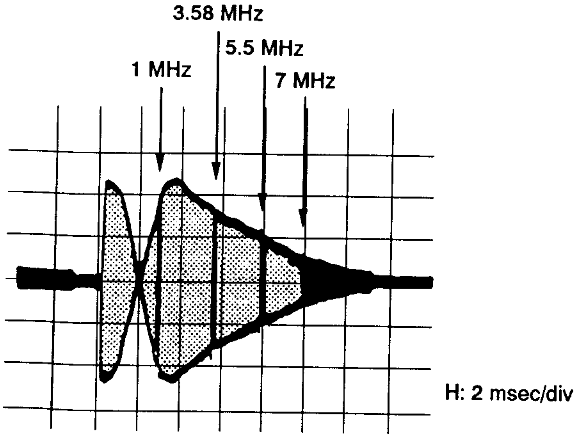

3.58 MHz
5.5 MHz
1 MHz
7 MHz
H: 2 msec/div

Fig. 9-11. Playback frequency characteristics adjustment

9-5-2. Flying Erase Check (VS-72 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ⑮ of CN101 (FE (X))
Measuring Instrument	Oscilloscope and frequency counter
Specified Value	Frequency: Over 7.0 MHz Voltage: Over 7.0 Vp-p

Note: Be sure to use MP type tape.
(Pin ⑫ of CN602 should be "L".)

Checking method:

1) Confirm that the oscillation frequency is over 7.0 MHz and the oscillation voltage is over 7.0 Vp-p.

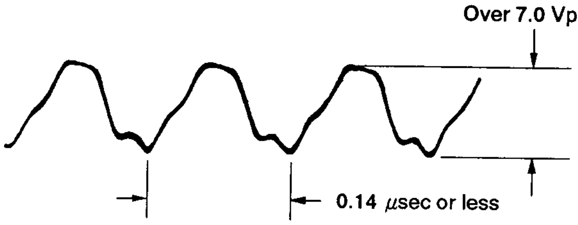

Over 7.0 Vp-p
0.14 μsec or less

Fig. 9-12. Flying erase check

9-5-3. Crystal Oscillator fo Checking (VS-72 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP)
Measurement Point	Pin ⑯ of IC203
Measuring Instrument	Frequency counter
Specified Value	4433618 ± 100 Hz

Note: Connect the frequency counter through a buffer having high impedance (approx. 10 MΩ) and low capacitance (less than 10 pF).

Checking method:

1) Confirm that the oscillation frequency at Pin ⑯ of IC203 is 4433618 ± 100 Hz.

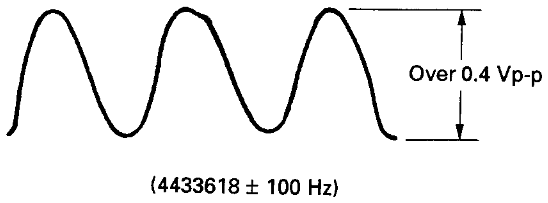

Over 0.4 Vp-p
(4433618 ± 100 Hz)

Fig. 9-13. Crystal oscillator fo adjustment

9-5-4. Y/C Separation Adjustment (VS-72 Board)

Mode	Recording
Signal	Color bars
Measurement Point	Any terminal of RV203 (DEV) (Pin ㉕ of IC203)
Measuring Instrument	Oscilloscope
Adjustment Element	RV207
Specified Value	Minimum residual chroma component

Connections:

1) Connect Pin ㊴ of IC203 (Pin ⑭ of IC202) to GND with a 10 μF/16V electrolytic capacitor.
(Capacitor negative side to GND)

Adjustment method:

1) Set the residual chroma component to minimum with RV207.

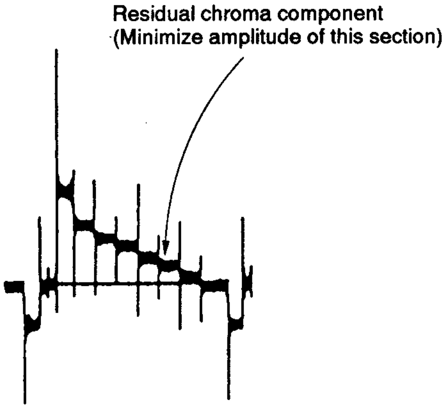

Residual chroma component
(Minimize amplitude of this section)

Fig. 9-14. Y/C separation adjustment

9-5-5. IR2 Adjustment (VS-72 Board)

Mode	Recording
Signal	Color bars
Measurement Point	Pin ⑧ of IC203 or base of Q229 (BF OUT)
Measuring Instrument	Oscilloscope
Adjustment Element	RV206
Specified Value	7.0 ± 0.2 μsec

Adjustment method:

1) Adjust RV206 so that it becomes 7.0 ± 0.2 μsec.

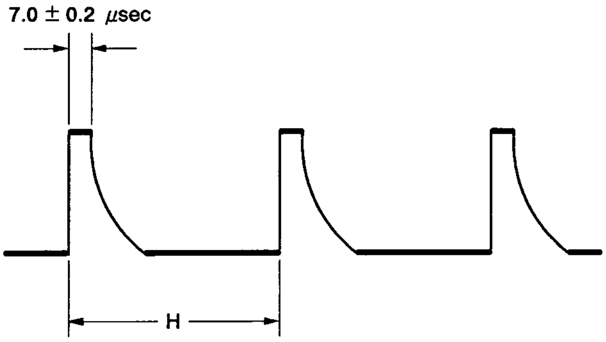


Fig. 9-15. IR2 adjustment

9-5-6. SYNC AGC Adjustment (VS-72 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin ㊾ of IC203
Measuring Instrument	Oscilloscope
Adjustment Element	RV201
Specified Value	0.49 ± 0.025 Vp-p

Adjustment method:

1) Adjust with RV201 so that it becomes 0.49 ± 0.025 Vp-p.

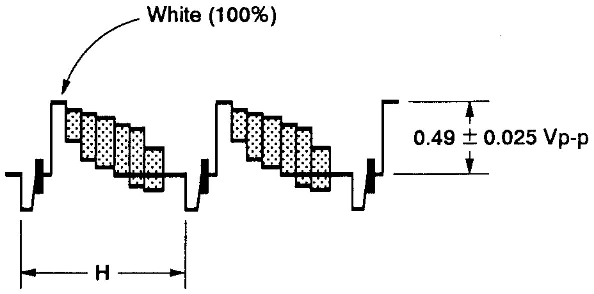


Fig. 9-16. SYNC AGC adjustment

9-5-7. Emphasis Input Level Adjustment (VS-72 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin (54) of IC203
Measuring Instrument	Oscilloscope
Adjustment Element	RV205
Specified Value	0.50 ± 0.025 Vp-p

Adjustment method:

1) Adjust with RV205 so that it becomes 0.50 ± 0.025 Vp-p.
2) Always perform “PB Y Level 2 Adjustment” after this adjustment.

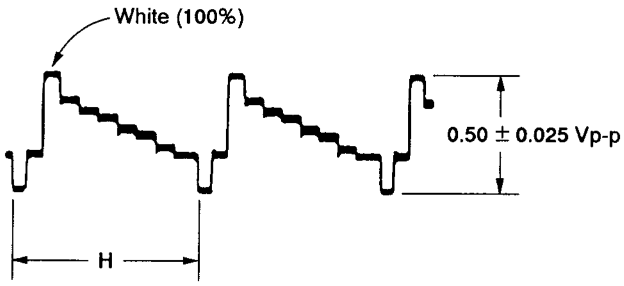


Fig. 9-17. Emphasis input level adjustment

9-5-8. PB Y Level 1 Adjustment (VS-72 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP) Color bar section
Measurement Point	Pin ㊼ of IC203 (Pin ⑤ of IC202)
Measuring Instrument	Oscilloscope
Adjustment Element	RV202
Specified Value	0.50 ± 0.025 Vp-p

Adjusting method:

1) Adjust to 0.50 ± 0.025 Vp-p with RV202.
2) Always perform “PB Y Level 2 Adjustment” after this adjustment.

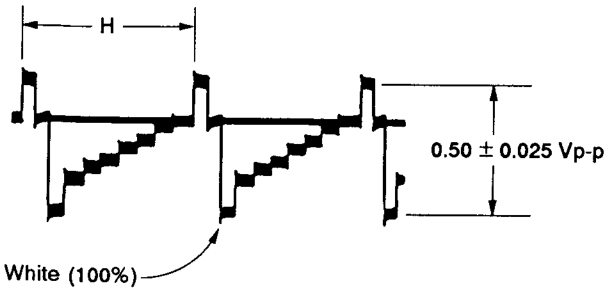


Fig. 9-18. PB Y level 1 adjustment

9-5-9. PB Y Level 2 Adjustment (VS-72 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP) Color bar section
Measurement Point	VIDEO output terminal (J901)
Measuring Instrument	Oscilloscope
Adjustment Element	RV208
Specified Value	$1.00^{+0.025}_{-0.05}$ Vp-p

Note: 1) Terminate VIDEO OUT (J901) at 75Ω.
2) Make sure that “PB Y Level 1 Adjustment” and “Emphasis Input Level Adjustment” have been completed.

Adjustment method:

1) Adjust with RV208 so that it becomes $1.00^{+0.025}_{-0.05}$ Vp-p.

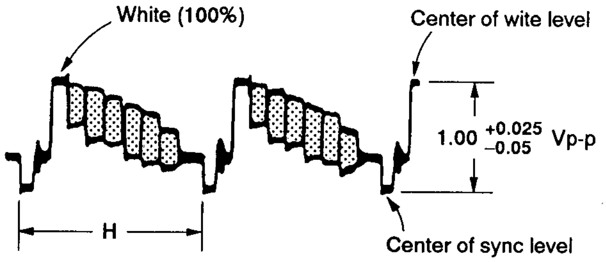


Fig. 9-19. PB Y level 2 adjustment

9-5-10. Y FM Carrier Frequency Adjustment (VS-72 Board)

Mode	Recording
Signal	No signal
Measurement Point	TP161^Note
Measuring Instrument	Frequency counter
Adjustment Element	RV204
Specified Value	4.39 ± 0.02 MHz

Note: TP161 is the check land. (See Fig. 9-23.)

Adjustment method:

1) Adjust to 4.39 ± 0.02 MHz with RV204.
2) Perform “Deviation Adjustment”.

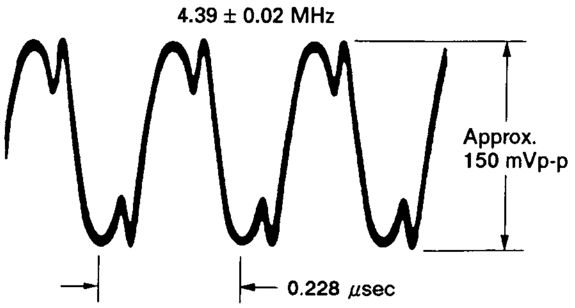


Fig. 9-20. Y FM carrier frequency adjustment

9-5-11. Y FM Deviation Adjustment (VS-72 Board)

Mode	Recording and playback
Signal	Color bar
Measurement Point	VIDEO output terminal (J901)
Measuring Instrument	Oscilloscope
Adjustment Element	RV203
Specified Value	Playback level is 1.00 ± 0.04 Vp-p

Note: 1) Confirm that "Emphasis Input Level Adjustment", "PB Y Level 2 Adjustment" and "Y FM Carrier Frequency Adjustment" have been completed.
2) Terminate VIDEO OUT (J901) at 75Ω .

Adjustment method:
1) Record the color bar signal.
2) Playback the recorded signal.
3) Confirm the playback output.
Specified value: 1.00 ± 0.04 Vp-p
4) If the specified value is not satisfied, repeat 1) to 3) after turning RV203 in the following manner.

	Rotation direction of RV203
When larger than specified value	Clockwise (↻)
When smaller than specified value	Counterclockwise (↺)

Table 9-2.

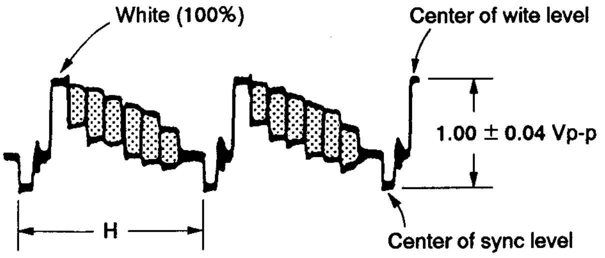

White (100%)
Center of wite level
1.00 ± 0.04 Vp-p
H
Center of sync level

Fig. 9-21. Y FM deviation adjustment

9-5-12. Chroma Emphasis fo Adjustment (VS-72 Board)

Mode	Recording
Signal	Color bar
Measurement Point	TP212$^{\text{Note}}$ (emitter of Q241)
Measuring Instrument	Oscilloscope
Adjustment Element	FL201
Specified Value	Minimum fo component

Note: TP212 is the check land. (See Fig. 9-23.)

Adjustment method:
1) Adjust with FL201 so that amplitude of the flat section of the chroma signal REC section becomes minimum.

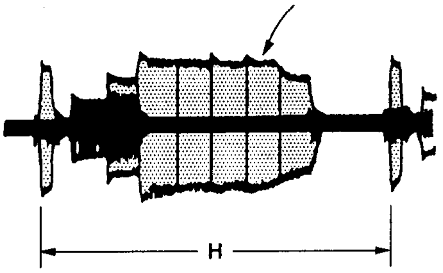

Minimize amplitude of flat section of chroma signal RED section

Fig. 9-22. Chroma emphasis fo adjustment

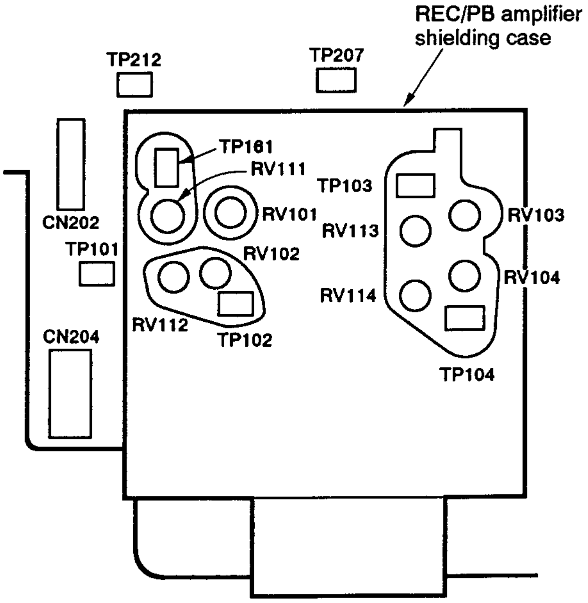

REC/PB amplifier shielding case
TP212
TP207
TP161
RV111
TP103
CN202
RV101
RV113
RV103
TP101
RV102
RV114
RV104
CN204
RV112
TP102
TP104

Fig. 9-23.

9-5-13. REC C RF Level Adjustment (VS-72 Board)

Mode	Recording
Signal	Color bar
Measurement Point	TP212^Note (emitter of Q241)
Measuring Instrument	Oscilloscope
Adjusting Element	RV210
Specified Value	250 ± 10 mVp-p

Note: TP212 is the check land. (See Fig. 9-23.)

Adjusting method:

1) Adjust RV210 so that the amplitude of flat red portion of the chroma signal becomes 250 ± 10 mVp-p.

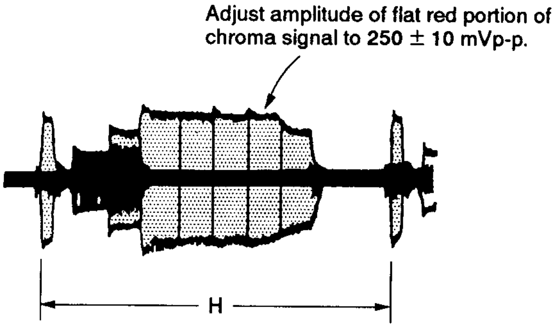

Adjust amplitude of flat red portion of chroma signal to 250 ± 10 mVp-p.
H

Fig. 9-24. REC C RF level adjustment

9-5-14. REC Y Level Adjustment (VS-72 Board)

Mode	Recording
Signal	No signal
Measurement Point	TP161^Note (emitter of Q237)
Measuring Instrument	Oscilloscope
Adjusting Element	RV209
Specified Value	135 ± 5 mVp-p

Note: TP161 is the check land. (See Fig. 9-23.)

Adjusting method:

1) Adjust RV209 for 135 ± 5 mVp-p.

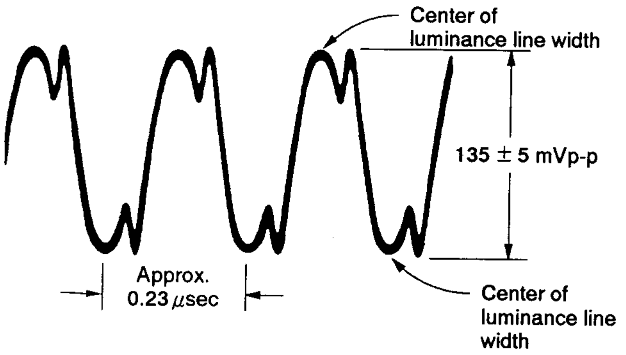

Center of luminance line width
135 ± 5 mVp-p
Approx. 0.23 μsec
Center of luminance line width

Fig. 9-25. REC Y level adjustment

9-5-15. REC C Current Adjustment (VS-72 Board)

Mode	Recording
Signal	Color bar
Measurement Point	CH-1 (1:1 probe): TP101 (connecting point between RV101 and R140) (1a)^Note 1 TP103 (connecting point between RV103 and R144) (1b)^Note 1 TP102 (connecting point between RV102 and R129) (2a)^Note 1 TP104 (connecting point between RV104 and R123) (2b)^Note 1 CH-2 (10:1 probe): Pin ⑤ (1/2 RF SWP) of CN204
Measuring Instrument	Oscilloscope
Adjusting Element	RV101 (1a) RV103 (1b) RV102 (2a) RV104 (2b)
Specified Value	17.0 ± 1.3 mVp-p

Note: 1) TP101 to TP104 are the check land. (See Fig. 9-23.)
2) Use the MP type tape.

Connections:

1) Remove CN401 on the AU-95 board.
2) Connect the Q543 emitter (REC ATF) and the collector on the VS-72 board with a jumper wire.

Adjusting method:

1) Adjust each RV so that the output waveforms of 1a, 1b, 2a, and 2b become 17.0 ± 1.3 mVp-p.

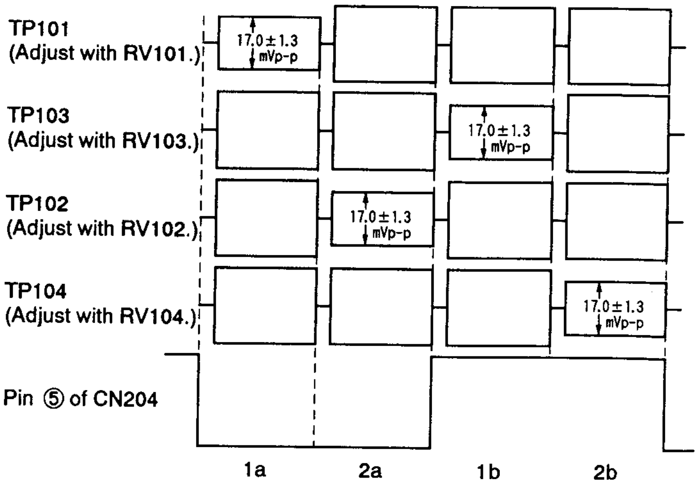

TP101
(Adjust with RV101.)
17.0±1.3 mVp-p
TP103
(Adjust with RV103.)
17.0±1.3 mVp-p
TP102
(Adjust with RV102.)
17.0±1.3 mVp-p
TP104
(Adjust with RV104.)
17.0±1.3 mVp-p
Pin ⑤ of CN204
1a
2a
1b
2b

Fig. 9-26. REC C current adjustment

9-5-16. REC ATF Current Check (VS-72 Board)

Mode	Recording
Signal	No signal
Measurement Point	TP101 (connecting point between RV101 and R140)Note 1 (1a) TP103 (connecting point between RV103 and R144)Note 1 (1b) TP102 (connecting point between RV102 and R129)Note 1 (2a) TP104 (connecting point between RV104 and R123)Note 1 (2b)
Measuring Instrument	Oscilloscope (1:1 probe)
Specified Value	5.5 ± 1.5 mVp-p (1a) 5.0 ± 1.5 mVp-p (1b) 5.5 ± 1.5 mVp-p (2a) 5.5 ± 1.5 mVp-p (2b)

Note: 1) TP101 to TP104 are the check land. (See Fig. 9-23.)
2) Use the MP type tape.

Connection:
1) Remove CN401 on the AU-95 board.

Checking method:
1) Trigger a 9.9 μsec (1 cycle) waveform superposed to the output waveform of TP101 (1a), and confirm that the waveform level is 5.5 ± 1.5 mVp-p.
2) Trigger a 6.1 μsec (1 cycle) waveform superposed to the output waveform of TP103 (1b), and confirm that the waveform level is 5.0 ± 1.5 mVp-p.
3) Trigger a 8.5 μsec (1 cycle) waveform superposed to the output waveform of TP102 (2a), and confirm that the waveform level is 5.5 ± 1.5 mVp-p.
4) Trigger a 6.8 μsec (1 cycle) waveform superposed to the output waveform of TP104 (2b), and confirm that the waveform level is 5.5 ± 1.5 mVp-p.

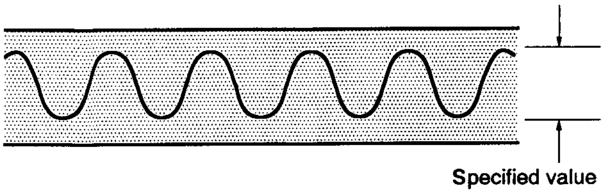


Fig. 9-27. REC ATF current check

9-5-17. Feedback Chroma Adjustment (PD-18 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP)
Measurement Point	Emitter of Q205
Measuring Instrument	Oscilloscope
Adjustment Element	RV201

Note: Remove the MD frame assembly to perform adjustments.

Adjusting method:
1) Set RV201 extreme counterclockwise position. (See Fig. 9-31.)
2) Turn RV201 sloely clockwise and stop where the correlative chroma component is minimum.

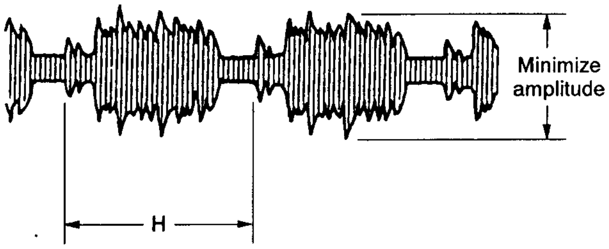


Fig. 9-28.

9-5-18. Quasi Burst Phase Adjustment (VS-72 Board)

1. Method using vectorscope

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP)
Measurement Point	VIDEO output terminal (J901)
Measuring Instrument	Vectorscope
Adjusting Element	RV212
Specified Value	Phase of color luminance points in quasi burst mode is same as phase of color luminance points in through burst mode

Adjusting method:

1) Memorize of the phase of the color luminance points (especially yellow). (Through burst mode)
2) Connect cathode of D216 and Pin ② of CN201 with a diode (1SS119, etc.). (Quasi burst mode)

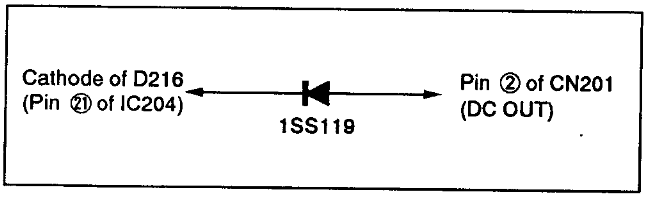


Fig. 9-29.

3) Confirm the color of color bars on the monitor screen. If abnormal, stop the unit and then set the playback mode again.
4) Adjust RV212 so that the phase of the color luminance points is the same as the phase memorized in 1).
5) Remove the diode.

2. Method using monitor TV

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP)
Measurement Point	Confirmation on monitor TV screen
Measuring Instrument	
Adjusting Element	RV212
Specified Value	Minimum chroma flickering

Connection:

1) Connect cathode of D216 and Pin ② of CN201 using a diode (1SS119, etc.).

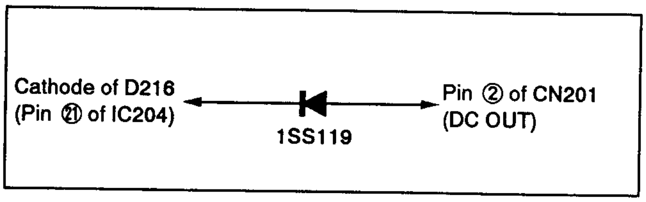


Fig. 9-30.

Adjusting method:

1) Observe the monitor screen. If color is abnormal, stop the unit and then set the playback mode again.
2) Set the monitor color level to maximum and its bright level to minimum.
3) Rotate RV212 fully in the counterclockwise direction (↺).
4) Turn RV212 slowly clockwise and stop where chroma flicker is minimum and horizontal black stripes are least visible.
5) Remove the diode.

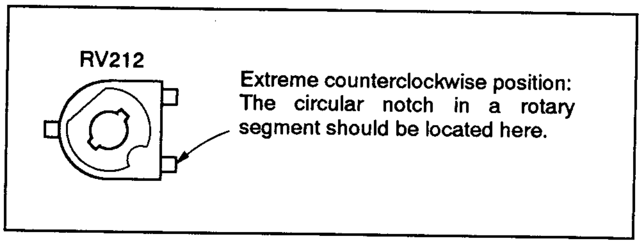

RV212
Extreme counterclockwise position:
The circular notch in a rotary segment should be located here.

Fig. 9-31.

9-5-19. Delay Burst Phase Adjustment (VS-72 Board)

Mode	Playback pause (LP mode)
Signal	Alignment tape for operation check (WR5-4CL) color bars
Measurement Point	Confirmation on monitor TV screen
Measuring Instrument	
Adjusting Element	RV213
Specified Value	Minimum chroma flickering

Adjusting method:

1) Set the monitor TV color level to maximum and its bright level to minimum.
2) Minimize chroma flicker with RV213 so that horizontal black stripes cannot longer be seen.

9-6. AUDIO SYSTEM ADJUSTMENT

- Perform adjustment with the color bar signal used as the video input signal.

[Connection of audio measuring instruments]
In addition to the video system measuring instruments, connect the audio system measuring instruments as shown in the figure below, and set the power switch to the video position for adjustment.

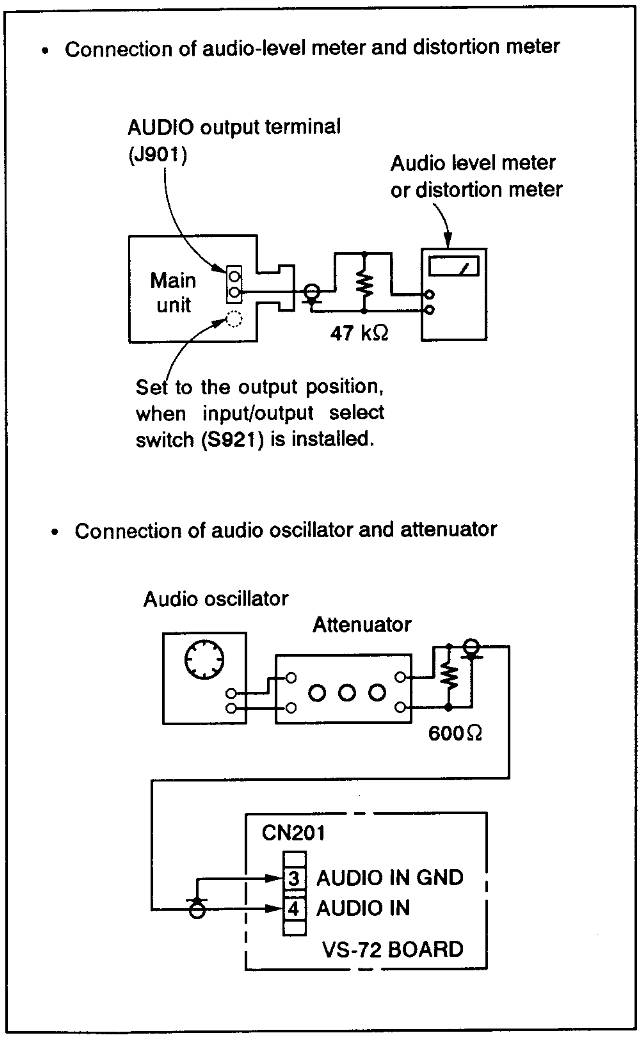

• Connection of audio-level meter and distortion meter
AUDIO output terminal (J901)
Audio level meter or distortion meter
Main unit
47 kΩ
Set to the output position, when input/output select switch (S921) is installed.
• Connection of audio oscillator and attenuator
Audio oscillator
Attenuator
600Ω
CN201
3 AUDIO IN GND
4 AUDIO IN
VS-72 BOARD

Fig. 9-32.

9-6-1. AFM Carrier Frequency Adjustment (AU-95 Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ⑬ of IC401(REC AFM) (JL419)
Measuring Instrument	Frequency counter
Adjusting Element	RV401
Specified Value	1.505 ± 0.002 MHz

Note: Connect the frequency counter through a buffer amplifier (oscilloscope, etc.) having high impedance and low capacitance.

Adjustment method:
1) Turn OFF the audio oscillator output.
2) Adjust the AFM carrier frequency is 1.505 ± 0.002 MHz using RV401.

9-6-2. REC AFM Carrier Level Check (AU-95 Board)

Mode	Recording
Signal	Non-signal
Measurement Point	Pin ⑧ of CN401 (REC AFM)
Measuring Instrument	Oscilloscope
Specified Value	68 ± 12 mVp-p

Checking method:
1) Confirm that the level is 68 ± 12 mVp-p.

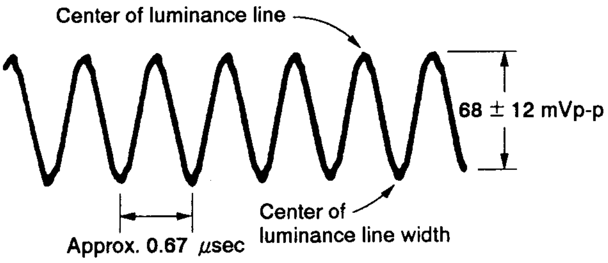

Center of luminance line
68 ± 12 mVp-p
Center of luminance line width
Approx. 0.67 μsec

Fig. 9-33. REC AFM carrier level

9-6-3. AFM Deviation Adjustment (AU-95 Board)

Mode	Playback
Signal	Alignment tape for operation check (WR5-5CSP)
Measurement Point	AUDIO output terminal (J901)
Measuring Instrument	Audio level meter
Adjusting Element	RV402
Specified Value	–7.5 ± 0.2 dBs

Checking method:
1) Adjust the audio output level is –7.5 ± 0.2 dBs.

9-6-4. E-E Output Level Check

Mode	E-E
Signal	400 Hz, –7.5 dBs
Measurement Point	AUDIO output terminal (J901)
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 2 dBs

Checking method:

1) Make sure that the audio output level is –7.5 ± 2 dBs.

9-6-5. Overall Level Characteristics Check

Mode	Self-recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	AUDIO output terminal (J901)
Measuring Instrument	Audio level meter
Specified Value	–7.5 ± 3 dBs

Checking method:

1) Record the signal.
2) Playback the recorded section.
3) Make sure that the audio output level is –7.5 ± 3 dBs.

9-6-6. Overall Frequency Characteristics Check

Mode	Self-recording and playback
Signal	Ⓐ 400 Hz, –17.5 dBs Ⓑ 30 Hz, –17.5 dBs Ⓒ 14 kHz, –17.5 dBs
Measurement Point	AUDIO output terminal (J901)
Measuring Instrument	Audio level meter
Specified Value	With the 400 Hz playback output level as 0 dB, the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB

Checking method:

1) Record signal Ⓐ through Ⓒ in order.
2) Playback the recorded sections.
3) With the 400 Hz playback output level as 0 dB, confirm that the playback output level of 30 Hz and 14 kHz is 0 ± 3 dB.

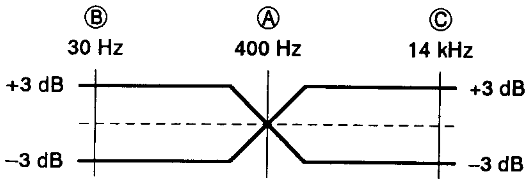


Fig. 9-34. AFM overall frequency characteristics

9-6-7. Overall Distortion Check

Mode	Self recording and playback
Signal	400 Hz, –7.5 dBs
Measurement Point	AUDIO output terminal (J901)
Measuring Instrument	Distortion meter
Specified Value	Less than 0.5% *1

Checking method:

1) Record the signal.
2) Playback the recorded section.
3) Confirm that the distortion is less than 0.5%*1.
   *1 Value when 200 Hz – 6 kHz 18dB/oct BPF is used.
   When the filter is not used .... less than 1.0%

9-6-8. Overall Noise Level Check

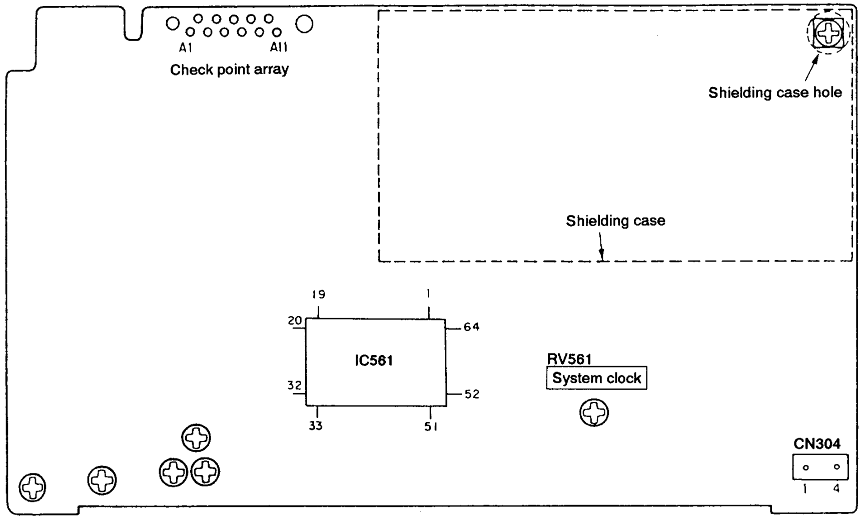
Mode	Self-recording and playback
Signal	No signal (shorting plug is inserted into AUDIO input jack)
Measurement Point	AUDIO output terminal (J901)
Measuring Instrument	Audio level meter
Specified Value	Less than – 67.5 dBs*2

Checking method:

1) Record the signal.
2) Playback the recorded section.
3) Make sure that the noise level is less than –67.5 dBs*2.
   *2 Value when IHF-A hearing correction filter is used.

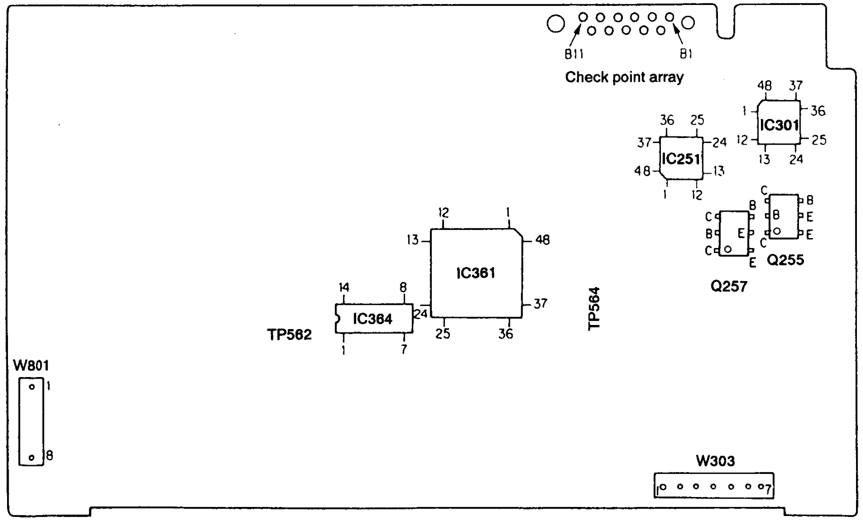
9-7. ARRANGEMENT DIAGRAMS FOR ADJUSTMENT PARTS

VC-84 BOARD (COMPONENT SIDE)
(Also Illustrated on page 244.)



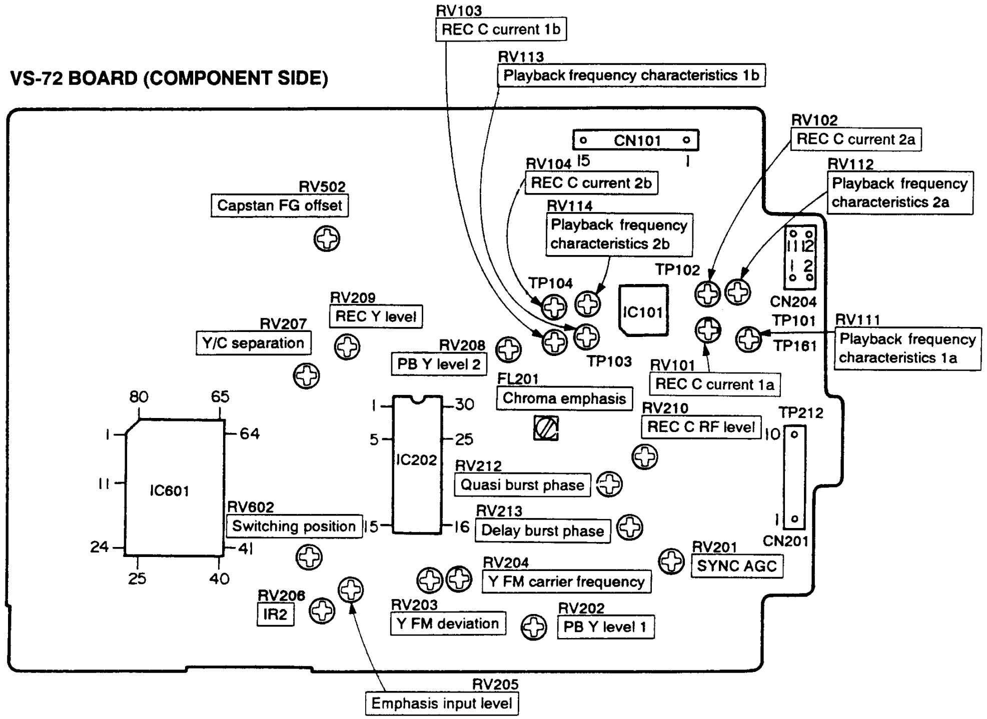
A1
A11
Check point array
Shielding case hole
Shielding case
IC561
19
1
20
64
32
52
33
51
RV561
System clock
CN304
1
4

VC-84 BOARD (CONDUCTOR SIDE)
(Also Illustrated on page 244.)



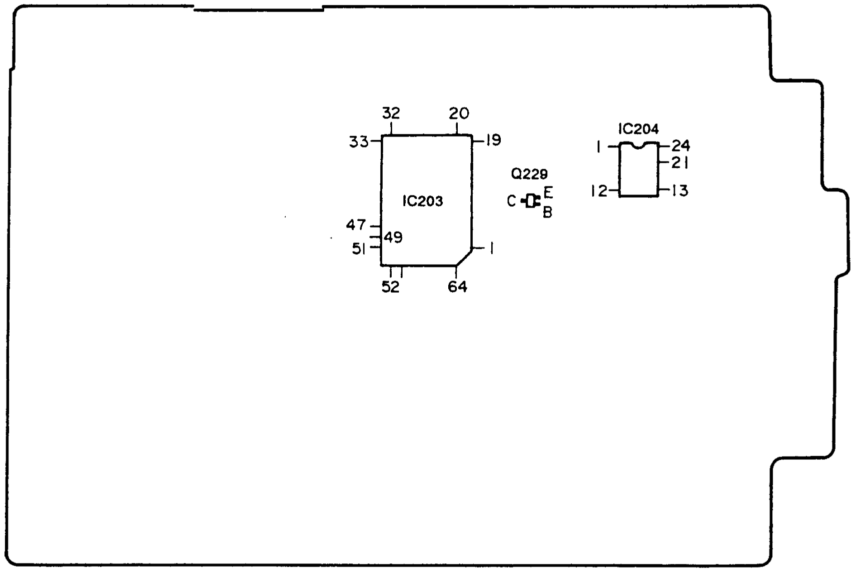
B11
B1
Check point array
IC301
48
37
1
36
12
25
13
24
IC251
36
25
37
24
48
13
1
12
IC381
12
1
13
48
37
25
36
IC384
14
8
24
1
7
TP562
TP564
Q257
Q255
C
B
E
W801
1
8
W303
1
7

VS-72 BOARD (COMPONENT SIDE)



RV103
REC C current 1b
RV113
Playback frequency characteristics 1b
RV102
REC C current 2a
RV112
Playback frequency characteristics 2a
CN101
15
1
RV104
REC C current 2b
RV114
Playback frequency characteristics 2b
RV502
Capstan FG offset
TP104
TP102
IC101
CN204
1
2
11
12
TP101
TP161
RV111
Playback frequency characteristics 1a
RV209
REC Y level
RV207
Y/C separation
RV208
PB Y level 2
TP103
RV101
REC C current 1a
FL201
Chroma emphasis
RV210
REC C RF level
TP212
10
IC601
80
65
1
64
11
24
25
40
41
IC202
1
30
5
25
15
16
RV212
Quasi burst phase
RV602
Switching position
RV213
Delay burst phase
CN201
RV201
SYNC AGC
RV204
Y FM carrier frequency
RV206
IR2
RV203
Y FM deviation
RV202
PB Y level 1
RV205
Emphasis input level

VS-72 BOARD (CONDUCTOR SIDE)



IC203
32
20
33
19
47
49
51
1
52
64
Q229
C
E
B
IC204
1
24
21
12
13

CCD-TR45E

SONY

SERVICE MANUAL

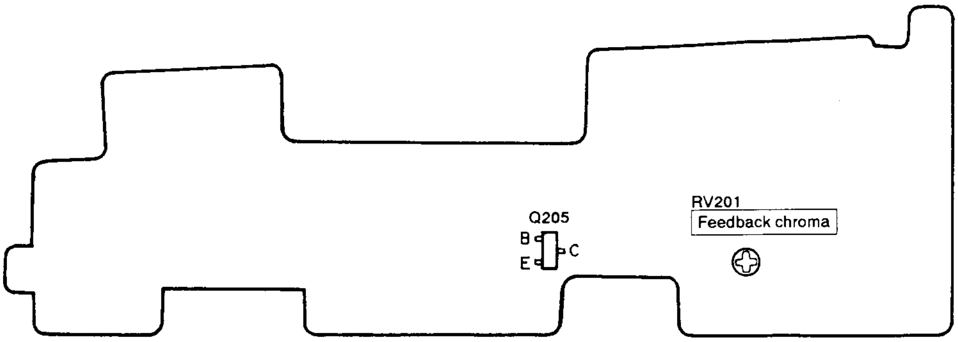
AEP Model
UK Model
E Model
Australian Model

CORRECTION-1

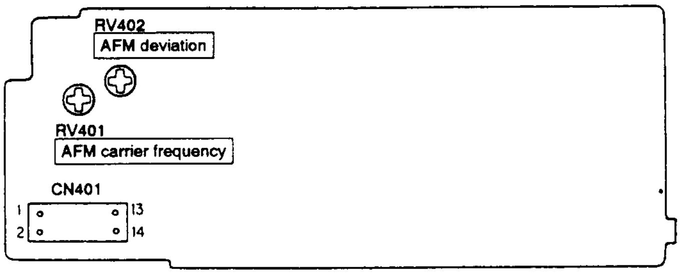
Please correct your service manual.

☞ : Please correct titles of PD-18 and AU-95 boards' arrangement diagrams on page 272, as follows.

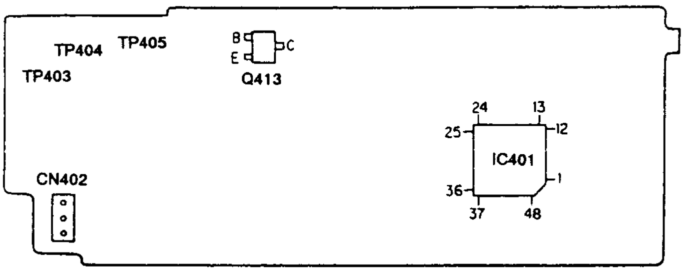
☞ **PD-18 BOARD (COMPONENT SIDE)**


Q205
B
E
C
RV201
Feedback chroma

☞ **AU-95 BOARD (COMPONENT SIDE)**


RV402
AFM deviation
RV401
AFM carrier frequency
CN401
1
2
13
14

☞ **AU-95 BOARD (CONDUCTOR SIDE)**


TP404
TP405
TP403
B
E
C
Q413
24
13
25
12
IC401
36
1
37
48
CN402

9-972-978-91

Sony Corporation
Personal Video Group

English
9011975-1
Printed in Japan
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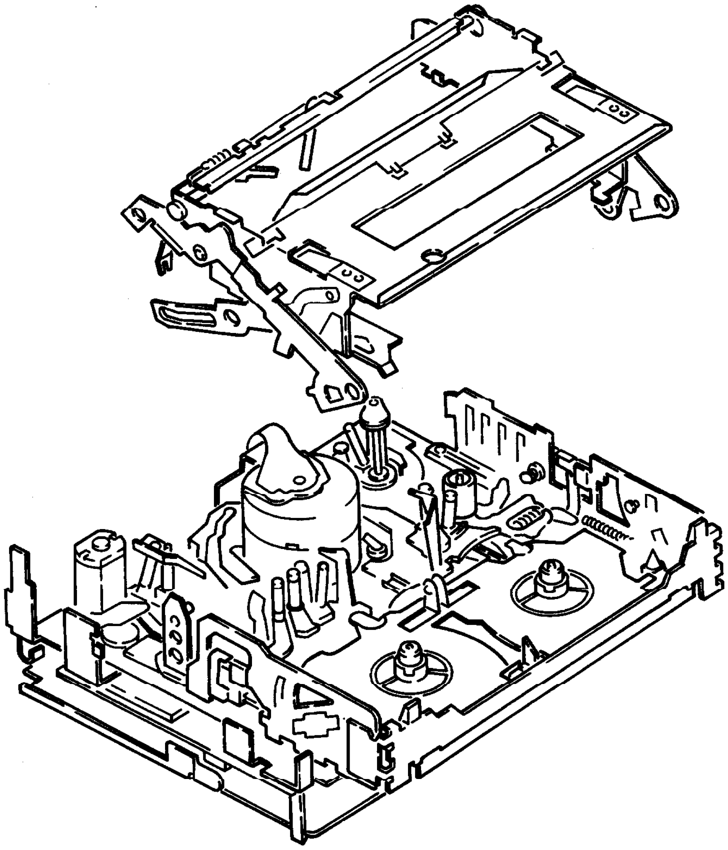
Published by Customer Relations and Service Group

8mm Video MECHANICAL ADJUSTMENT MANUAL II

FL MECHANISM (Q MECHANISM) Video 8

File with the SERVICE MANUAL



8 VIDEO RECORDER

SONY®

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1. PREPARATION FOR MECHANICAL CHECK, ADJUSTMENT AND MAINTENANCE

For removal of the cabinet and boards, refer to "Disassembly" in each Service Manual.
Mechanical adjustment is done in the USE mode. (To select the USE mode, refer to "1-4 Handling of Mode Selector".)

1-1 CASSETTE COMPARTMENT HOLDER ASSEMBLY (Fig. 1)

1. Removal

1) Select the USE mode.
2) Remove the screw ●, and then, the LS support ●.
3) Remove the four screws ●, and then, the LS frame assy ●.
4) Remove the three lock washers ●, and then, the washer ●, bar, joint ●, T protector assy ●, and TP arm assy ● in that order.
5) Remove the two screws●, and then, the two arm shafts A●.
6) Remove the shaft through the long hole●. With the cassette compartment holder assembly●rotated in a direction of the arrowⒶ, remove the long holes●and●from the shaft in that order, and then, remove the cassette compartment holder assembly●.
7) Slide the BS holder●in a direction of the arrow Ⓑ as shown in Fig. A and remove it in a direction of the arrowⒸ.

Note : When this is done, be careful not to drop the steel ball and spring, compression out of the BS holder ●.

2. Mounting

1) Select the USE mode.
2) Mount the BS holder●in the reverse order of its removal. Note : Refer to Fig. A.
3) Mount the shafts in the order of the long holes ●, ●and● of the cassette compartment holder assembly●, respectively.

Note : When this is done, rotate the cassette compartment holder assembly●in a direction of the arrowⒶ to mount it until the long hole is aligned with the oval shape of the shaft.

4) Align the oval shape of the two arm shafts A●with the long holes of the LS chassis, fit them in firmly and fix with the two screws●.
5) Mount the TP arm assy ●, T protector assy ● and bar, joint ●, respectively. Then, mount the washer ● and three lock washers ●.
6) Mount the LS frame assy ● to the chassis and fix with the four screws ●.
7) Mount the LS support ● to the chassis and fix with the screw ●.

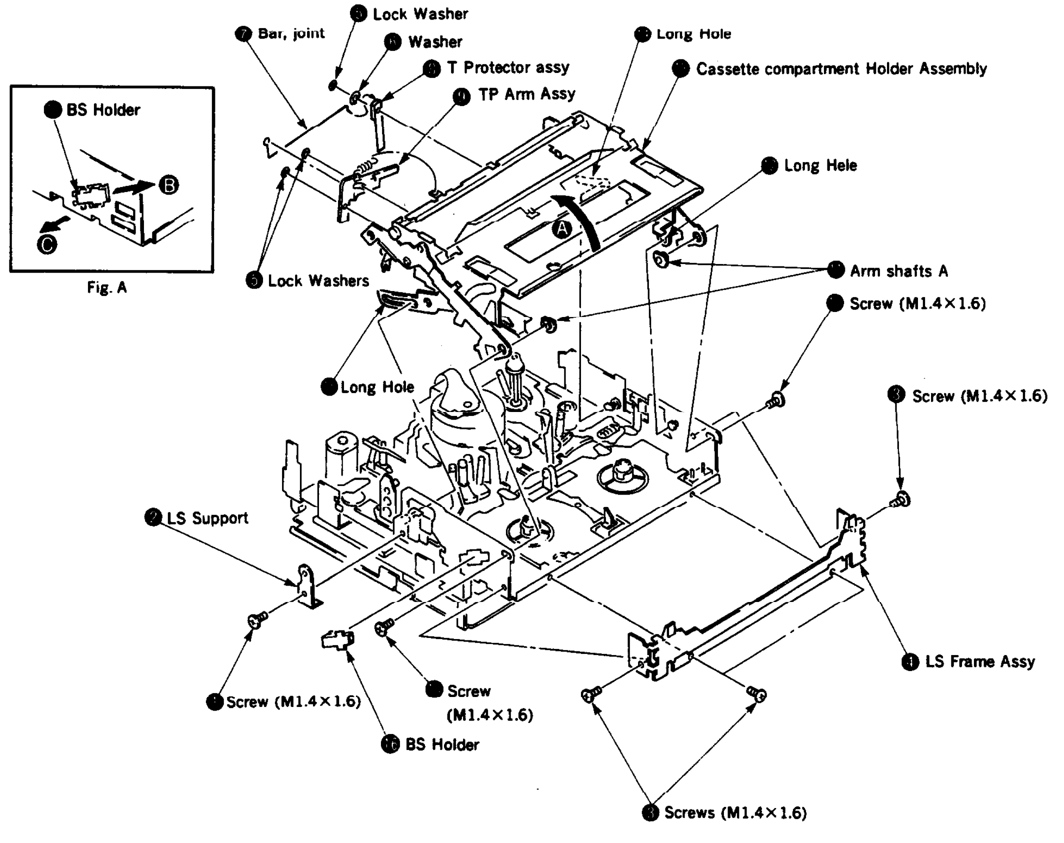

● Lock Washer
⑦ Bar, joint
● Washer
● T Protector assy
● TP Arm Assy
● Long Hole
● Cassette compartment Holder Assembly
● BS Holder
Ⓑ
Ⓒ
Fig. A
● Long Hele
Ⓐ
● Lock Washers
● Arm shafts A
● Screw (M1.4×1.6)
● Long Hole
● Screw (M1.4×1.6)
● LS Support
● LS Frame Assy
● Screw (M1.4×1.6)
● Screw (M1.4×1.6)
● BS Holder
● Screws (M1.4×1.6)

Fig. 1

1-2 CASSETTE COMPARTMENT LOCK HEIGHT ADJUSTMENT (Fig. 2)

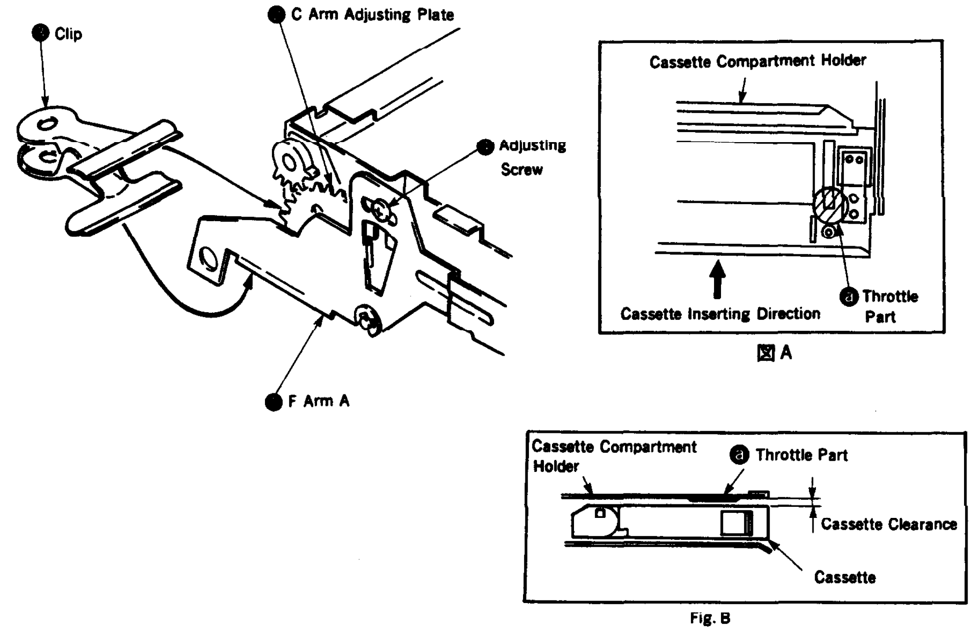
1) Using a spacer, etc., insert a 15.3mm-thick cassette to lock the cassette compartment.

Note : As shown in Fig. A, a 15.3mm-thick portion may be under the throttle partⓐ.

2) Pressing the partⓐ, nip the F arm A ● and the first tooth of the C arm adjusting plate ● with the clip ●, and tighten the adjusting screw ● at a torque of 1kg•cm.

3) Apply Screw Lock to the adjusting screw ● after making sure of the following clearances between the throttle partⓐ of the cassette compartment holder and the cassette as shown in Fig. B.

- For 15mm-thick dummy cassette : 0.5 – 0.9
- For 15.2mm-thick dummy cassette : 0.3 – 0.7


● Clip
● C Arm Adjusting Plate
● Adjusting Screw
● F Arm A
Cassette Compartment Holder
Cassette Inserting Direction
ⓐ Throttle Part
Cassette Compartment Holder
ⓐ Throttle Part
Cassette Clearance
Cassette

図A

Fig. B

Fig. 2

1-3 OPERATION WITH CASSETTE COMPARTMENT HOLDER ASSEMBLY REMOVED

1. Putting into Loading state (Fig. 3)

1) Referring to the Service Manual, supply power with the cabinet and camera section removed. (Make the mechanism deck ready to operate.)
2) Place the cap ● on the LED assembly ●.
3) Press the pin of the push switch ● (ON state) and fix it with adhesive tape ● in that state.
4) Press the locking plate release arm ● in an arrow direction. The set is made ready for loading.

2. Putting into the REC Mode

1) Short the TEST pins (SS-82 board CN404 pins ● and ● for CCD-V11/V88) to place into the TEST mode.

For CCD-V11/V88 ; SS-82 board CN404
TEST pin connector

4	GND
3	$\overline{\text{CAM ADJ}}$
2	$\overline{\text{TEST}}$
1	$\overline{\text{PATH}}$

The set is placed into the TEST mode by shorting the pins ● and ●.

2) After completing the step 1), set the power switch to VTR (or CAMERA).
3) Turn on the REC switch. (If the set is placed in the TEST mode, detection of S and T reel table rotation is disabled and the tape can run.)

3. Putting into EJECT

1) Turn on the EJECT switch.

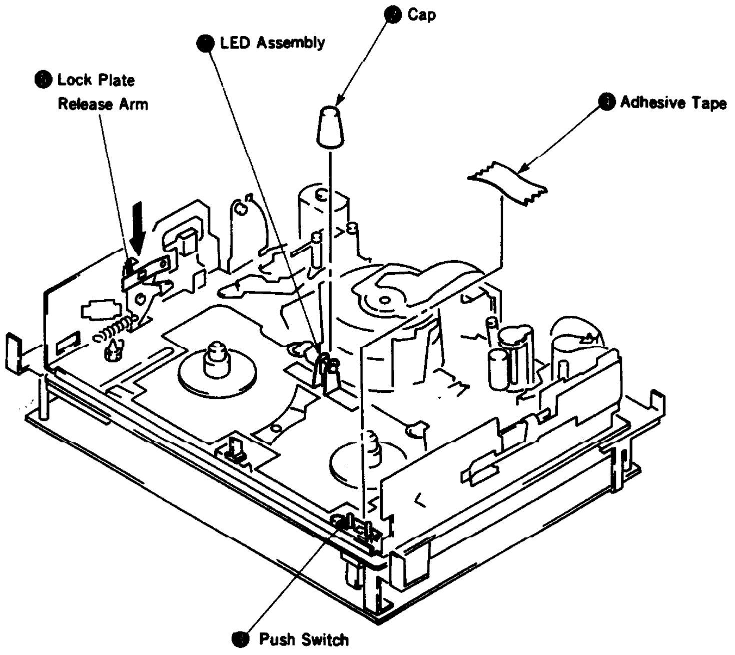


Fig. 3

1-4 HANDLING OF MODE SELECTOR

- Mount the MODE SELECTOR III panel to the mode selector. U, FL, O and O′ mechanisms have different mode indications respectively. Select your disired type. (Fig. 4)

1. Construction (Fig. 5)

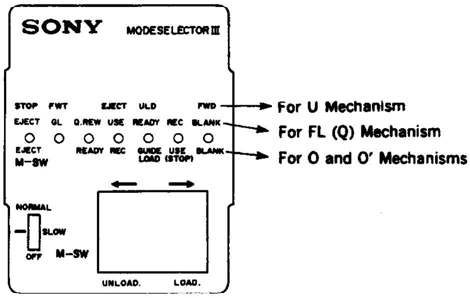
2. Connection (Fig. 6)

For CCD-VII/V88

1) Remove the plate, ornamental ●.
2) Remove the screw ●, and then, the LB-12 board ●.
3) Remove the FP-114 flexible connector ● and loading motor connector ●, and insert them into the MODE SELECTOR III conversion connector respectively.
4) Insert the M-SW connector of the mode selector into the MODE SELECTOR III conversion connector.

3. Handling

1) Use the M mode selector buttons only.
2) During mode selection, "BLANK" lights up when no mode is being selected.
3) If the right M mode selector button is kept pressed, EJECT, USE, GL, Q.REW, GL, REC and READY light up in that order.
4) When changing over from the READY mode back to the EJECT mode, press the left M mode selector button to select your desired mode.


SONY
MODESELECTOR III
STOP FWT EJECT ULD FWD
EJECT GL Q.REW USE READY REC BLANK
EJECT READY REC GUIDE LOAD USE (STOP) BLANK
M-SW
NORMAL
SLOW
OFF
M-SW
UNLOAD.
LOAD.
For U Mechanism
For FL (Q) Mechanism
For O and O′ Mechanisms

Ref. No. J-13 MODE SELECTOR III Panel

Fig. 4

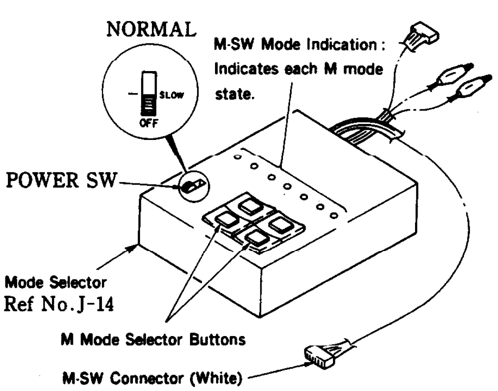

NORMAL
SLOW
OFF
POWER SW
M-SW Mode Indication : Indicates each M mode state.
Mode Selector
Ref No. J-14
M Mode Selector Buttons
M-SW Connector (White)

Fig. 5

For CCD-V11/V88

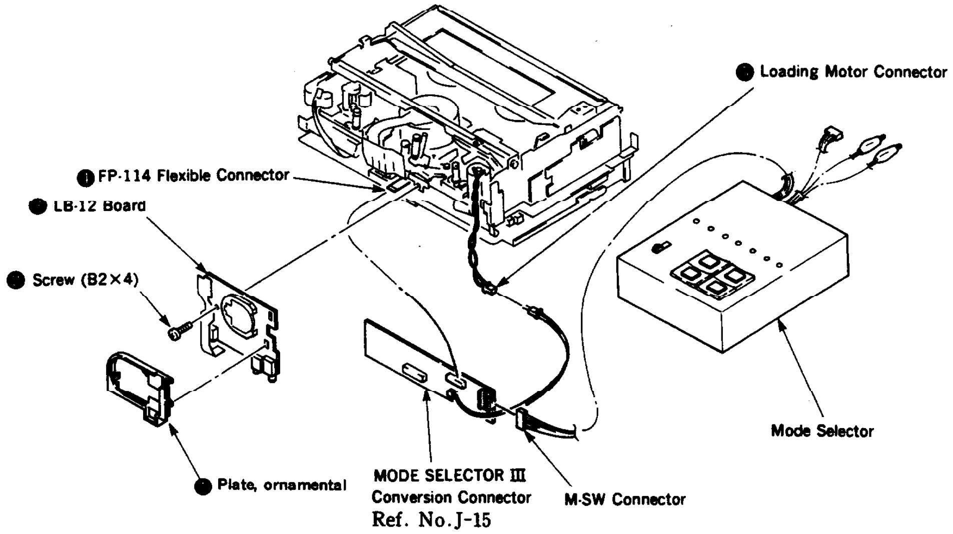
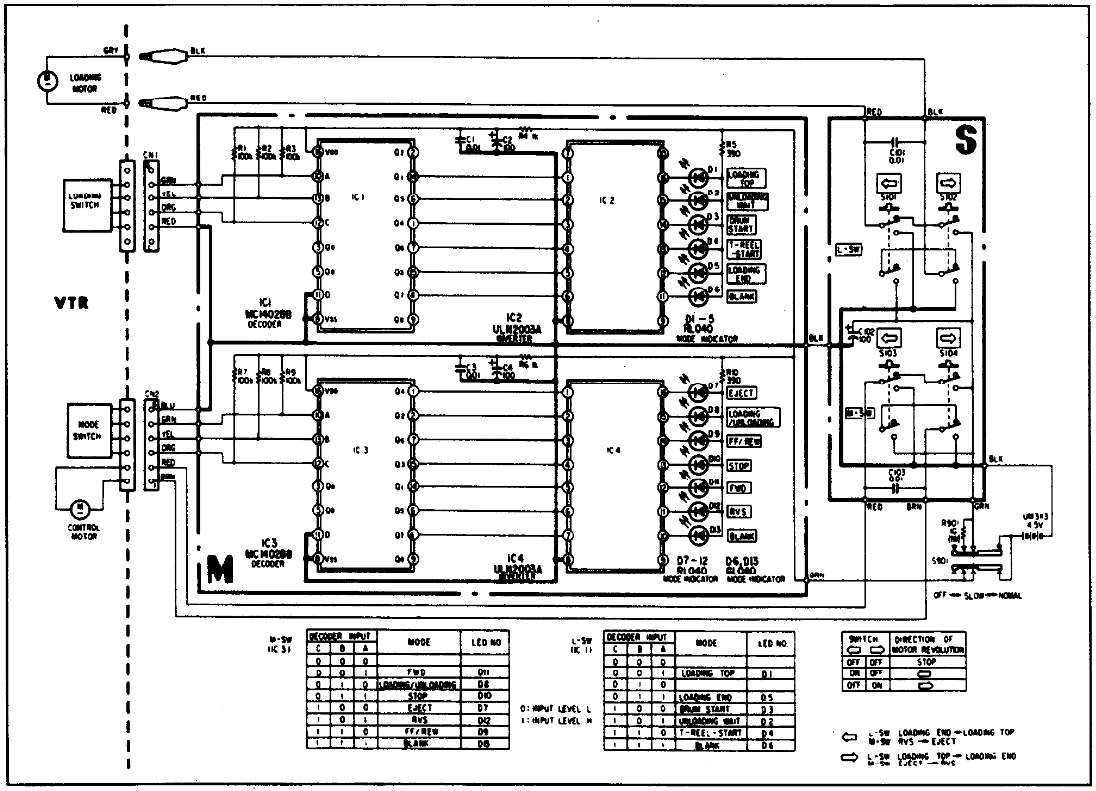

● Loading Motor Connector
● FP-114 Flexible Connector
● LB-12 Board
● Screw (B2×4)
● Plate, ornamental
MODE SELECTOR III Conversion Connector
Ref. No. J-15
M-SW Connector
Mode Selector

Fig. 6

1-5 MODE SELECTOR SCHEMATIC DIAGRAM


GRY
BLK
LOADING MOTOR
RED
CN1
LOADING SWITCH
GRN
YEL
ORG
RED
VTR
CN2
MODE SWITCH
BLU
GRN
YEL
ORG
RED
BRN
CONTROL MOTOR
R1 100k
R2 100k
R3 100k
IC1
IC1 MC14028B DECODER
C1 0.01
C2 100
R4 1k
IC2
IC2 ULN2003A INVERTER
R5 390
D1
D2
D3
D4
D5
D6
LOADING TOP
UNLOADING WAIT
DRUM START
T-REEL -START
LOADING END
BLANK
D1-5 RL040 MODE INDICATOR
R7 100k
R8 100k
R9 100k
IC 3
IC3 MC14028B DECODER
C3 0.01
C4 100
R6 1k
IC4
IC4 ULN2003A INVERTER
R10 390
D7
D8
D9
D10
D11
D12
D13
EJECT
LOADING /UNLOADING
FF/REW
STOP
FWD
RVS
BLANK
D7-12 RL040 MODE INDICATOR
D6,D13 GL040 MODE INDICATOR
M
S
RED
BLK
C101 0.01
S101
S102
L-SW
C102 100
S103
S104
M-SW
C103 0.01
BLK
RED
BRN
GRN
R901 1Ω (1W)
UM3×3 4.5V
S901
OFF ⟷ SLOW ⟷ NOMAL

M-SW (IC 3)

DECODER INPUT			MODE	LED NO
C	B	A		
0	0	0		
0	0	1	FWD	D11
0	1	0	LOADING/UNLOADING	D8
0	1	1	STOP	D10
1	0	0	EJECT	D7
1	0	1	RVS	D12
1	1	0	FF/REW	D9
1	1	1	BLANK	D6

0: INPUT LEVEL L
1: INPUT LEVEL H

L-SW (IC 1)

DECODER INPUT			MODE	LED NO.
C	B	A		
0	0	0		
0	0	1	LOADING TOP	D1
0	1	0		
0	1	1	LOADING END	D5
1	0	0	DRUM START	D3
1	0	1	UNLOADING WAIT	D2
1	1	0	T-REEL-START	D4
1	1	1	BLANK	D6

SWITCH		DIRECTION OF MOTOR REVOLUTION
⇦	⇨	
OFF	OFF	STOP
ON	OFF	⇦
OFF	ON	⇨

⇦ L-SW LOADING END → LOADING TOP
M-SW RVS → EJECT

⇨ L-SW LOADING TOP → LOADING END
M-SW EJECT → RVS

1-6 MODE SELECTOR PARTS LIST

Ref. No	Part No.	Description			
		CAPACITOR			
C1	1-108-579-00	MILER	0.01μF	50V	
C2	1-123-333-00	ELECT	100μF	24V	
C3	1-108-579-00	MILER	0.01μF	50V	
C4	1-123-333-00	ELECT	100μF	24V	
C101	1-108-579-00	MILER	0.01μF	50V	
C102	1-123-333-00	ELECT	100μF	24V	
C103	1-108-579-00	MILER	0.01μF	50V	
		DIODE			
D1	8-719-812-31	DIODE TLR123			
D2	8-719-812-31	DIODE TLR123			
D3	8-719-812-31	DIODE TLR123			
D4	8-719-812-31	DIODE TLR123			
D5	8-719-812-31	DIODE TLR123			
D6	8-719-812-33	DIODE TLG123A			
D7	8-719-812-31	DIODE TLR123			
D8	8-719-812-31	DIODE TLR123			
D9	8-719-812-31	DIODE TLR123			
D10	8-719-812-31	DIODE TLR123			
D11	8-719-812-31	DIODE TLR123			
D12	8-719-812-31	DIODE TLR123			
D13	8-719-812-33	DIODE TLG123A			

Ref. No	Part No.	Description		
		IC		
IC1	8-752-240-28	IC TC4028BP		
IC2	8-752-120-03	IC μPA2003C		
IC3	8-759-240-28	IC TC4028BP		
IC4	8-759-120-03	IC μPA2003C		
		RESISTOR		
R1	1-247-179-00	CARBON	100K	1/4W
R2	1-247-179-00	CARBON	100K	1/4W
R3	1-247-179-00	CARBON	100K	1/4W
R4	1-247-131-00	CARBON	1K	1/4W
R5	1-247-121-00	CARBON	390	1/4W
R6	1-247-131-00	CARBON	1K	1/4W
R7	1-247-179-00	CARBON	100K	1/4W
R8	1-247-179-00	CARBON	100K	1/4W
R9	1-247-179-00	CARBON	100K	1/4W
R10	1-247-121-00	CARBON	390	1/4W
R901	1-214-594-00	METAL	10	1W

2. PERIODIC CHECK AND MAINTENANCE

- Carry out the following maintenance and periodic checks in order not only to fully exhibit the functions and performance of the set, but also for the equipment and tape. After repairing, service the set as follows, regarless of the length of use.

2-1 CLEANING OF ROTARY DRUM ASSEMBLY

1) Gently apply chamois cloth (Ref. No. J-2) soaked in cleaning liquid (Ref. No. J-1) to the rotary drum assembly.
Clean it by rotating the upper rotary drum assembly slowly counterclockwise by hand.

Note : Do not rotate the motor by power or rotate the upper rotary drum assembly clockwise by hand. Also, the head tip is highly likely to be damaged if the chamois cloth is moved in a pependicular direction to the it. Make sure to follow the instructions above for cleaning the rotary drum assembly.

2-2 CLEANING OF TAPE PATH (Fig. 7)

1) In the EJECT mode, clean the tape running system (TG-1, -2, -3, -4, -5, -6, -7, -8, -9, -10, -11, pinch roller, and capstan shaft) and the lower drum, using a superfine applicator (Ref. No. J-3) soaked in the cleaning liquid.

Note : Note that no oil or grease of each link mechanism adheres to the superfine applicator (Ref. No. J-3).

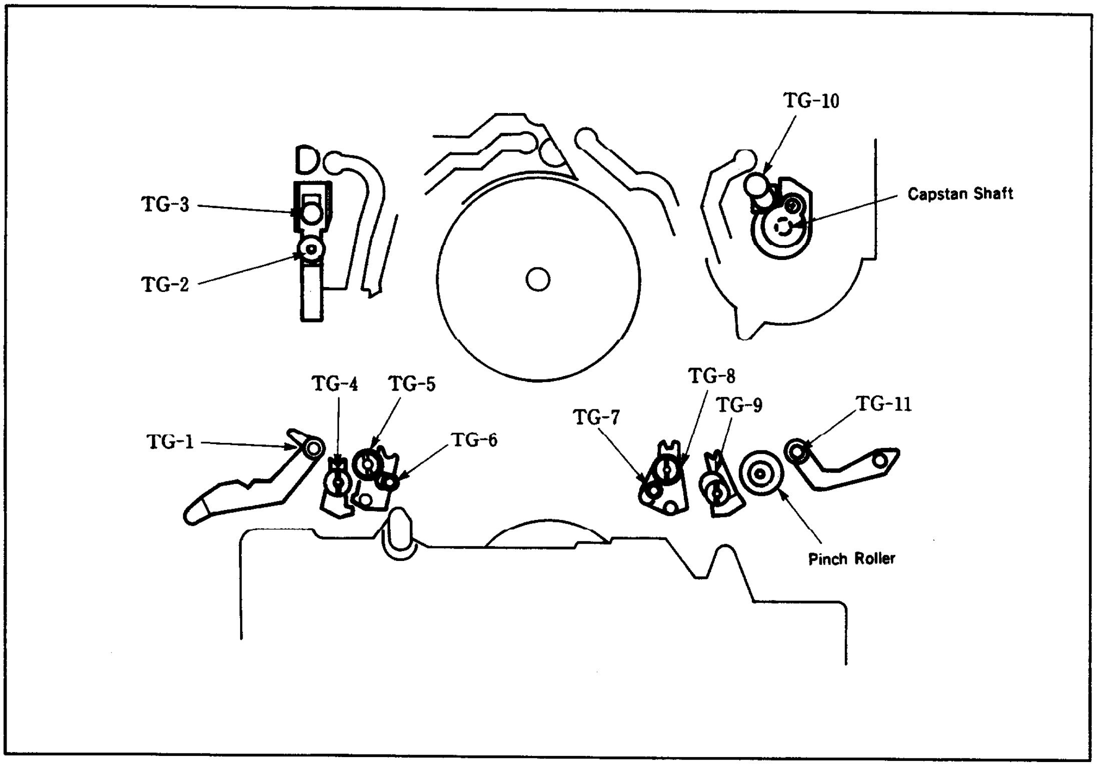


Fig. 7

2-3 PERIODIC CHECK ITEMS

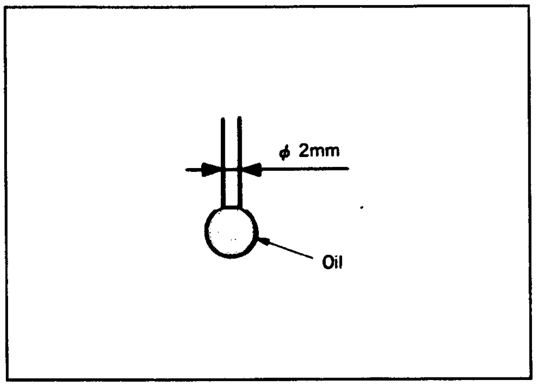
	Location of Maintenance and check	**Hours of Use (H)**										**Remarks**
		500	**1000**	**1500**	**2000**	**2500**	**3000**	**3500**	**4000**	**4500**	**5000**	
Tape trans-portion System	Cleaning of tape path surface	○	○	○	○	○	○	○	○	○	○	Be careful of oil
	Cleaning and degaussing of rotary assembly	○	○	○	○	○	○	○	○	○	○	Be careful of oil
Driving System	Relay belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-728-212-01
	Capstan shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Be adsolutely careful not to get oil on the tape path surface.
	Relay pulley sheft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading motor	—	☆	—	☆	—	☆	—	☆	—	☆	1-541-607-11
Performance Confirmation	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake system	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD. RVS torque measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○ : Cleaning ◎ : Oil ☆ : Confirmation

Note : When overhauling, refer to the items above to replace parts.

Note : Concerning oil

- Be sure to use specified oil. (If you use oil with different visicosity, etc., it may cause troubles.)
  Oil : Part No. 7-661-018-18 (Mitsubishi Diamond Oil Hydrofluid NT-68)
- When lubricating bearings, be sure use oil free from dust, etc. (If you use oil with dust, etc. contained, it may cause bearings to be worn out or seized.)
- A drip of oil refers to an amount attached to the tip of a ϕ 2mm stick shown in the right figure.

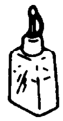


2-4 Service jigs list

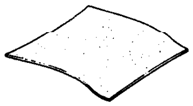
Ref. No.	Neme	Part No.	Fixture No.	Usage and Others
J-1	Cleasing fluid	Y-2031-001-0	—	
J-2	Cleasing cloth	2-034-697-00	—	
J-3	Super fine applicator (Made by NIPPON APPLICATOR, P752D)		—	
J-4	Head degausser	Widely available	—	
J-5	Small mirror for adjustment Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-7	Dial tension gauge	J-6080-827-A		Various torque measurement
J-8	Tension measurement reel	J-6080-831-A		With ϕ30 tape
J-9	FWD and RVS winding torque cassette	J-6080-824-A	GD-2086	
J-10	Drum screwdriver (Hexagonal wrench screwdriver)	7-700-766-01		
J-11	Screwdriver for tape path	J-6082-026-A		For tape guide adjustment
J-12	Mode selector Ⅲ panel	J-6082-023-A		
J-13	Mode selector	J-6080-825-A		For all models
J-14	Mode selector Ⅲ conversion connector	J-6082-021-A		

Other equipment
- Oscilloscope
- Analog tester (20kΩ)

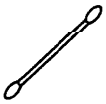
J-1



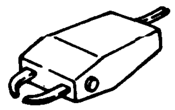
J-2



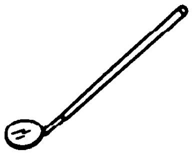
J-3



J-4



J-5



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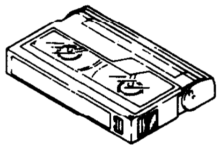

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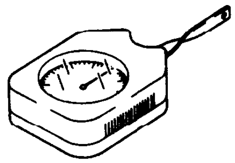

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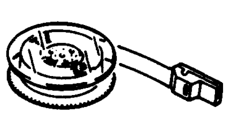

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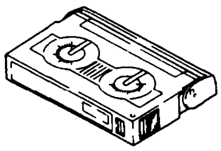
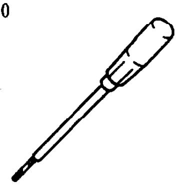
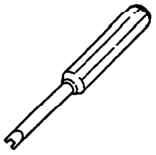


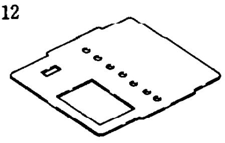
J-10



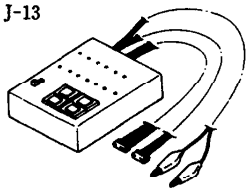
J-11



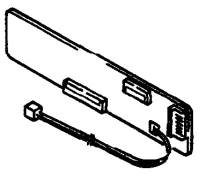
J-12



J-13



J-14



3. MECHANICAL CHECK, ADJUSTMENT AND REPLACEMENT

Note : Use the mode selector (Ref. No. J-14) for the following mechanical checks, adjustments and replacements.

Note : The modes in ☐ are those set by pressing the mode selector buttons.

3-1 LED BASE (Fig. 8)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) As shown in Fig. A, rotate the LED in a direction of the arrow Ⓐ and remove it in a direction of the arrowⒷ.
4) Remove the three screws ●, ● and ●.
5) Lifting the LED base ●, remove it by pushing it in a direction of the arrowⒸ.

Note : Dismount and remount the LED base carefully, because its holder is easily deformed.

2. Mounting

1) Select the USE mode.
2) Put the claw ● of the LED base ● in the notch ● of the LS chassis without catching the LED in between. Next, fit to the dowels ● at 2 places.
3) Mount and tighten the screws ●, ● and ● in that order.
4) As shown in Fig. B, set the LED in a direction of the arrowⒶ and rotate it in a direction of the arrowⒷ to fix.
5) As shown in Fig. C, bend a flexible boord and put it in the holder.

Note : In the step2), make sure that the barring ● of the arm assy, gear can appears in the hole of the LED base. (Fig. D)

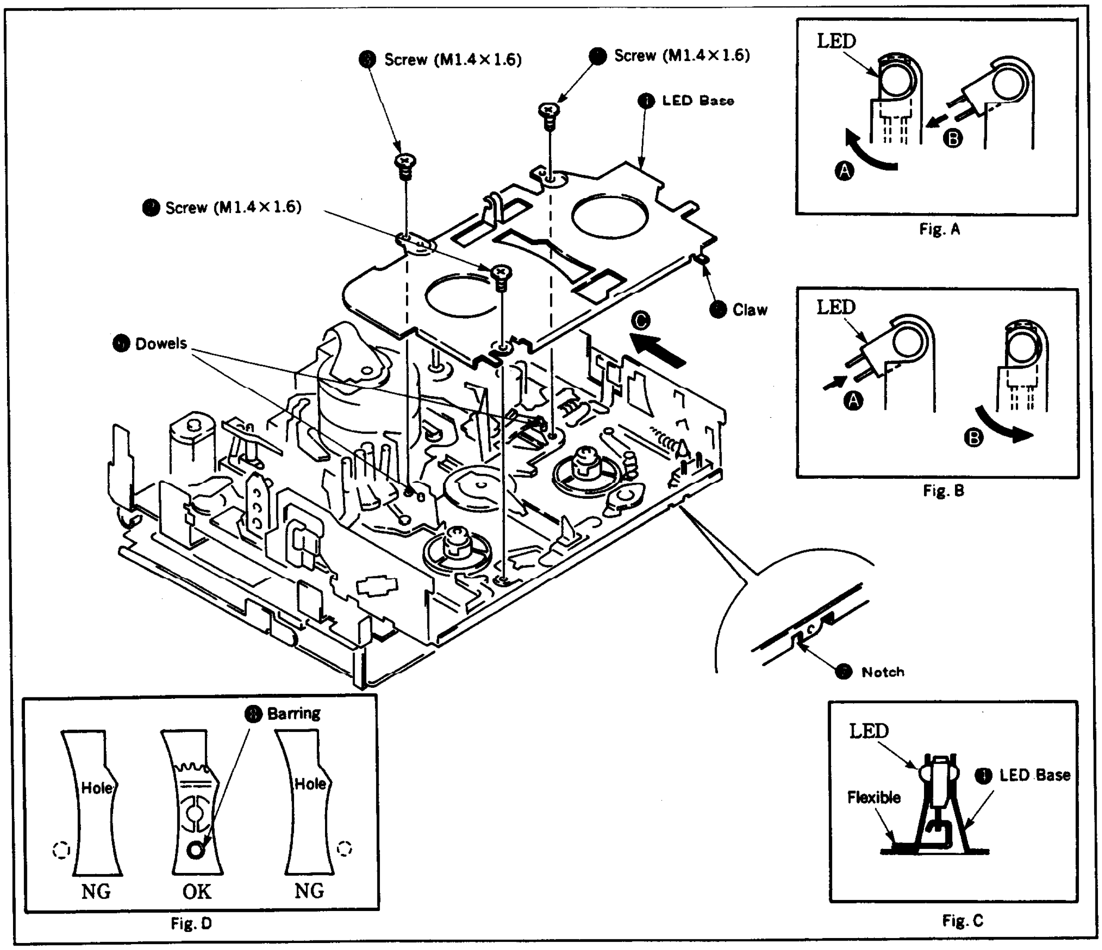


Fig. A

Fig. B

Fig. D

Fig. C

Fig. 8

3-2 RL BASE ASSEMBLY, RETAINER (Fig. 9)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assemlby.
3) Referring to 3-1, remove the LED base.
4) Remove the screw ●, and then, retainer ●.
5) Remove the screw ●, and then, RL base assembly ●.

2. Mounting

1) Select the USE mode.
2) With the screw ●, mount the RL base assembly ● to the LS chassis.
3) With the screw ● fix the retainer ● to the RL base assembly ●.
   When this is done, align the bump part ⁎ of the retainer ● with the bump part ⁎ of the guide rail T. (Fig. A)
4) Referring to 3-1, mount the LED base.
5) Referring to 1-1, mount the cassette compartment holder assembly.

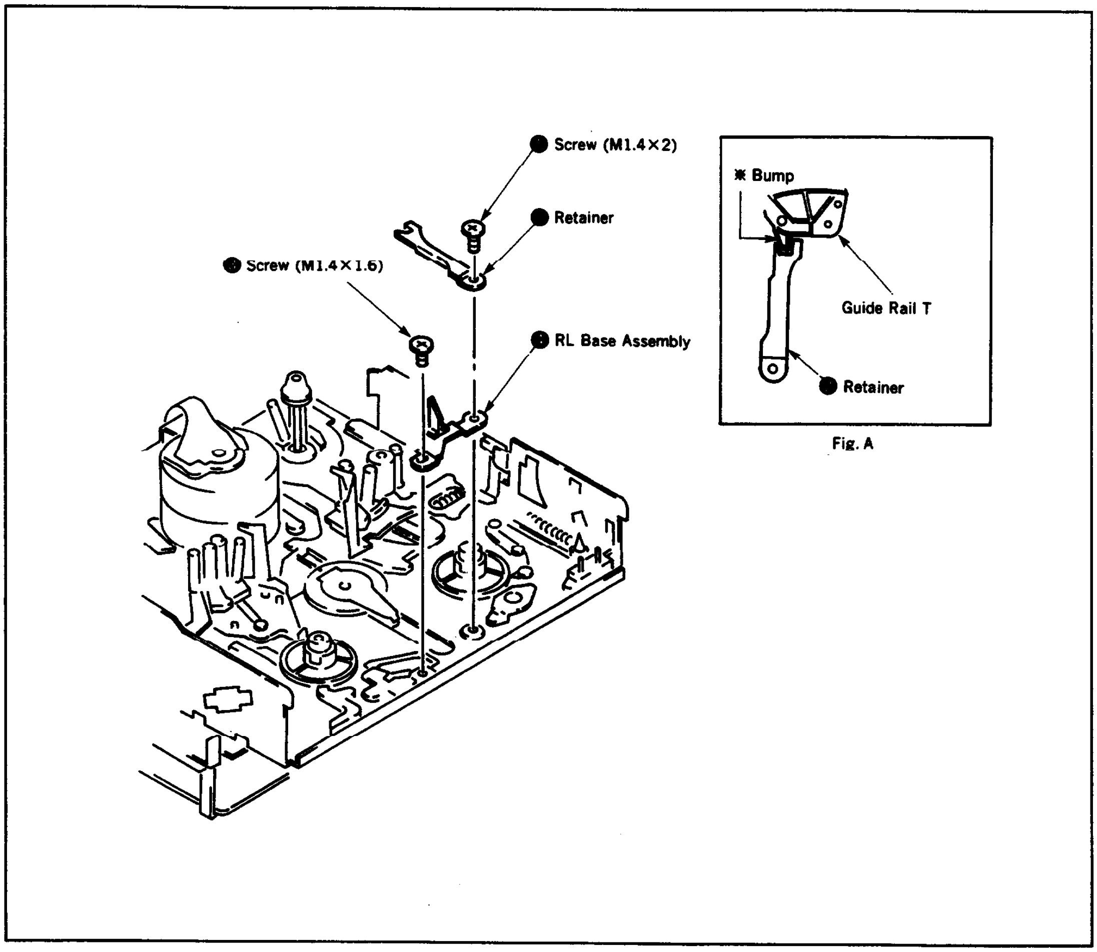

● Screw (M1.4×2)
● Retainer
● Screw (M1.4×1.6)
● RL Base Assembly
⁎ Bump
Guide Rail T
● Retainer
Fig. A

Fig. 9

3-3 TABLE ASSY, REEL, SUPPLY (Fig. 10)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) As shown in Fig. A, making use of slackness of the tension regulator string ● in the USE mode, remove the string out of the groove of the table assy, reel, supply ●. When this is done, be careful not to bend the tension regulator string ● and the S soft arm ● must be moved in a direction of the arrow Ⓑ.
5) Remove the table assy, reel, supply ●.

Note : Dismount and remount the table assy, reel, supply ●, holding the reel claw ✱.

2. Mounting

1) Select the USE mode.
2) As shown in Fig. B, move the S soft arm ● in a direction of the arrow Ⓑ.
3) Avoiding the tension regulator string ●, mount the table assy, reel, supply ● to the shaft ●.
4) Put the tension regulator string ● in the groove of the table assy, reel, supply ● and fit it properly by turning the table assy, reel, supply ●.
5) Referring to 3-1, mount the LED base.
6) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Do not touch the tension regulator string ● with naked hand. Also, be careful of adhesion of grease, etc.

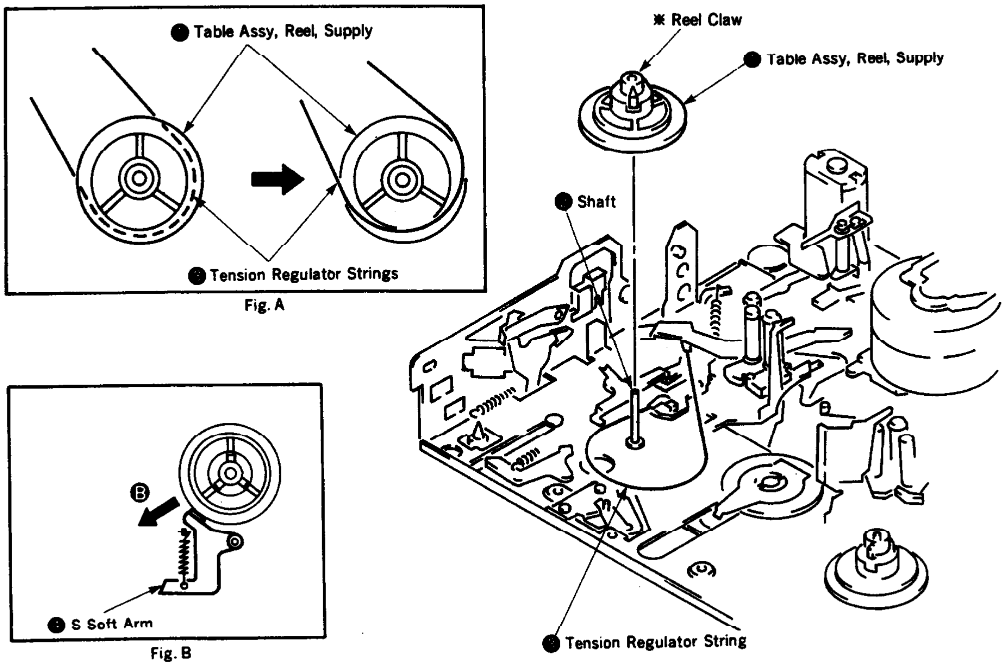

● Table Assy, Reel, Supply
● Tension Regulator Strings
Ⓑ
● S Soft Arm
✱ Reel Claw
● Table Assy, Reel, Supply
● Shaft
● Tension Regulator String

Fig. A

Fig. B

Fig. 10

3-4 TABLE ASSY, REEL, TAKE-UP (Fig. 11)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Referring to 3-2, remove the retainer.
5) Dispace the T ratchet ● in a direction of the arrowⒶ.
6) With the claw (T ratchet head) of the T ratchet ● moved in a direction of the arrowⒷ, remove the Table assy, reel, take-up ●.

Note : Dismount and remount the Table assy, reel, take-up ●, holding the reel claw ✱.

2. Mounting

1) Select the USE mode.
2) With the claw (T ratchet head) of the T ratchet ● moved in an arrow direction, mount the Table assy, reel, take-up ● to the shaft ●.
3) Referring to 3-2, mount the retainer.
4) Referring to 3-1, mount the LED base.
5) Referring to 1-1, mount the cassette compartment holder assembly.

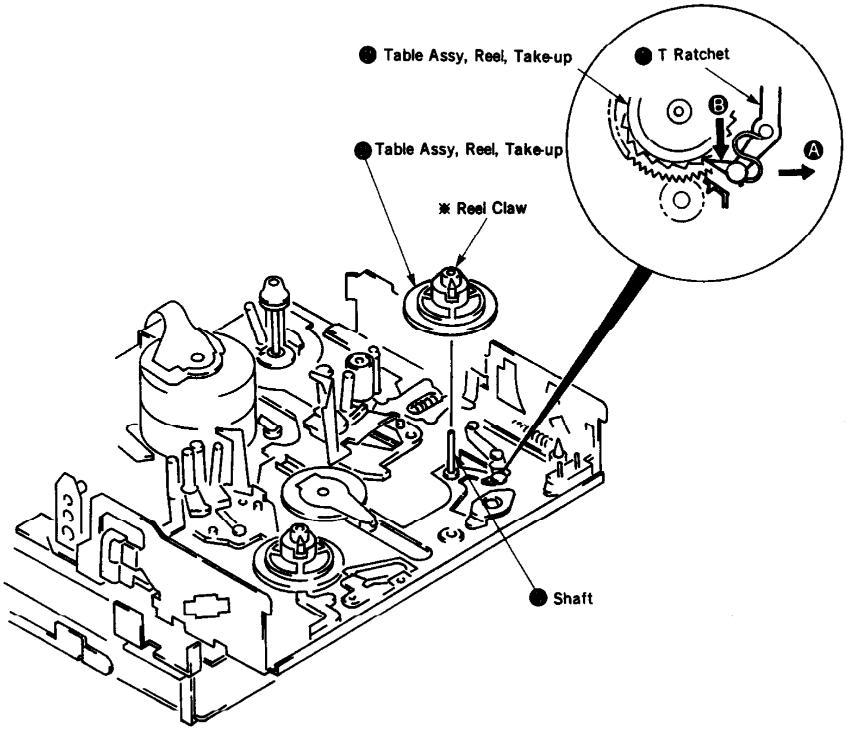


Fig. 11

3-5 ONEWAY CLUTCH ASSEMBLY (Fig. 12)

1. Removal

1) Select the $\boxed{\text{USE}}$ mode.
2) Referring to the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Remove the screw ❶, and then, oneway clutch assembly ❷.

2. Mounting

1) Select the $\boxed{\text{USE}}$ mode.
2) Mount the oneway clutch assembly ❷ to the LS chassis and fix with the screw ❶.
3) Referring 3-1, mount the LED base.
4) Referring to 1-1, mount the cassette compartment holder assembly.

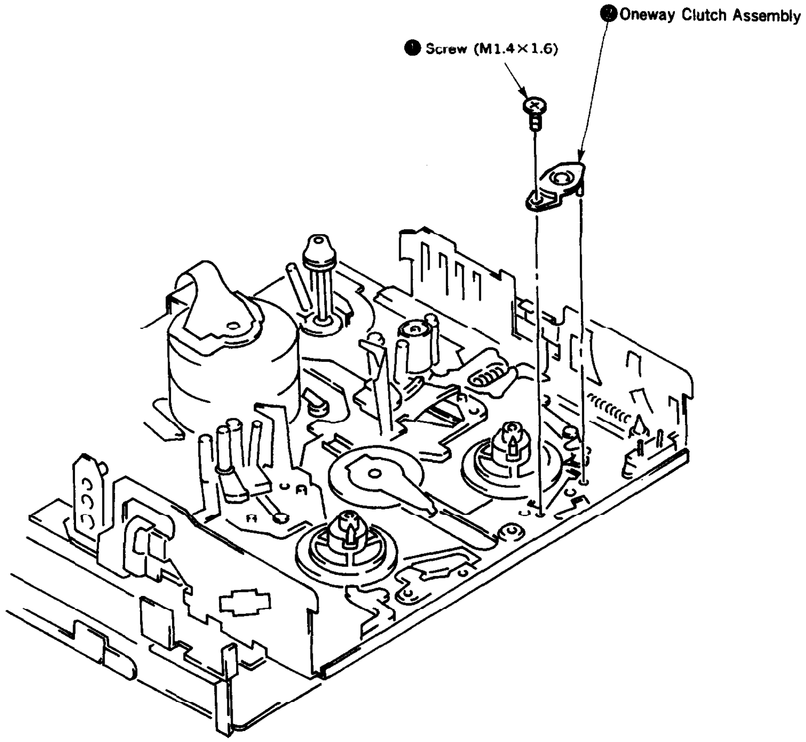


Fig. 12

3-6 S SOFT ARM ASSEMBLY (Fig. 13)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder assembly.
3) Referring to 3-1, remove the LED base.
4) Rerove the lock washer ●, and then, the spring, tension ●.
5) Remove the S soft arm assembly ● by rotating it in an arrow direction (until the hook ● comes off the LS chassis).

2. Removal

1) Select the USE mode.
2 As shoms in Fig. A, apply a quarter drip of oil to the arrowir dicated part of the shaft ●.
3) Mount the S soft arm assembly ● to the shaft ●, rotating it ii as arrow direction. (Be careful not to bend the hook ●.)
4) Hook the spring, tension 2 onto the claw and fix it with lock washer 1.
5) Referring to 3-1, mount the LED base.
6) Referring to 1-1, mount the cassette compartment holdei assembly.

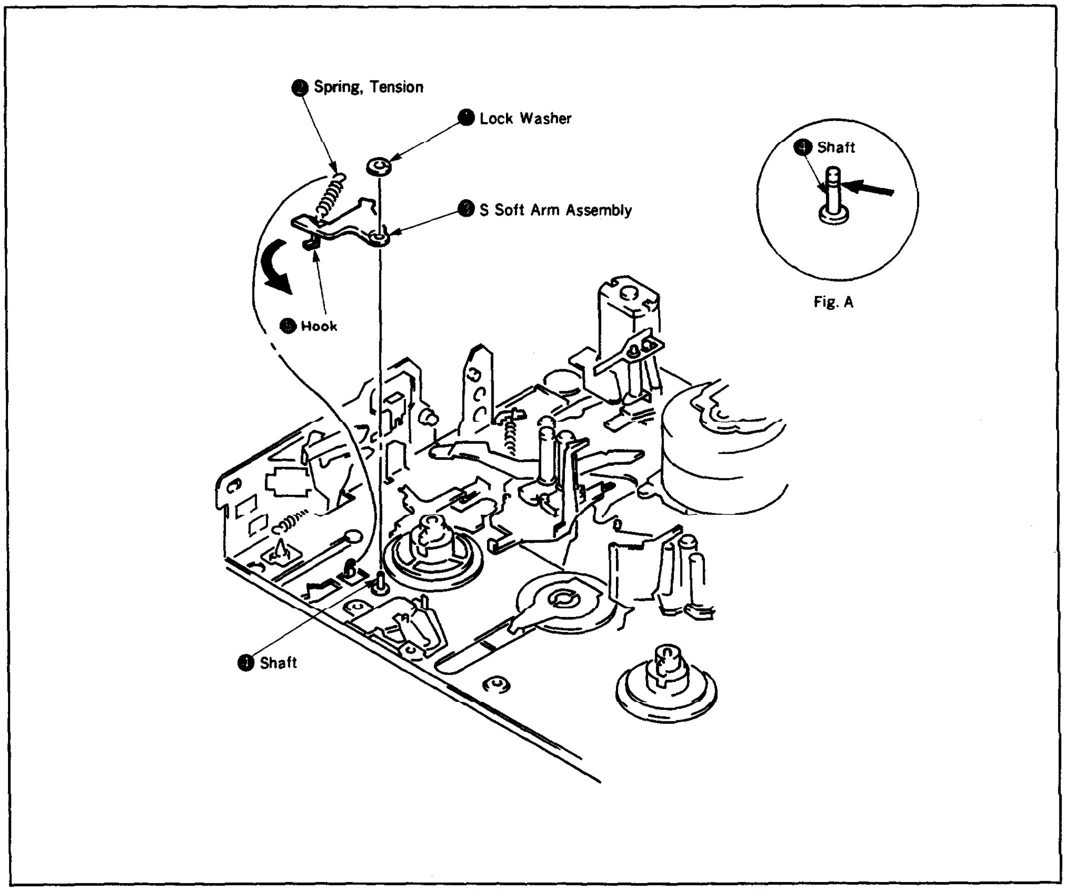


Fig. 13

3-7 LS CHASSIS ASSEMBLY (Fig. 14)

1. Removal

1) Select the USE mode.
2) Referring to 1-1, remove the cassette compartment holder.
3) Referring to 3-1, remove the LED base.
4) Referring to 3-2, remove the RL base assembly and retainer.
5) Remove the lock washer ❶, and then, arm assy gear ❷.
6) Select the Q, REW mode.
7) Remove the flexible rotary shaft ❸, and then, the flexible connector ❹.
8) Remove the E retaining ring ❺ and three screws ❻.
9) Remove the LS chassis assembly ❼ in a direction of the arrow Ⓓ.

2. Mounting

1) As shown in Fig. A, apply Molyton grease to the arrow-indicated part of the LS chassis assembly ❼.
2) Unload in the RDY mode. Start docking in the Q, REW mode after first GL. When docking the mechanical chassis and LS chassis assembly ❼, it is necessary to place the following parts at specified positions.
3) Put the pin ㉔of the pinch arm assembly ㉓into the left side of the pinch press arm assembly[illegible]. (Fig.19)
4) Move the TG-1 arm assembly⓭in a direction of the arrow Ⓐ to put the pin ⓯into the concave of the arm assembly ⓱. (Fig. 17)
5) put the pin[illegible]of the S ratchet⓲into the right side the of the arm assembly⓱. (Fig. 17)

Simultancously performing the operations above, push the roller of the guide lock arm ❽ With the arm arc portion of the guide arm T assembly[illegible] (Fig. 15) to push the LS chassis assembly ❼ in a direction of the arrow Ⓔ, and at the same time, engage the claws of the guide rail base 1[illegible], guide rail base 2⓫and guide rail base3⓬with those of the guide rail S㉕ and guide rail T㉖. (Fig. 16)

Then, align the shafts ❾ of the mechanical chassis With the four long joints of the LS chassis assembly ❼, and put the LS pin[illegible]of the LS arm assembly[illegible]in the groove of the LS cam plate㉒. (Fig.18)

Note : Before docking, confirm that both EJ arm and LS arm are deeply inserted into the shafts. (If not properly fit, the set does not function even if the LS chassis is docked.

6) Mount the E retaining ring ❺ and three screws ❻.
7) Mount the flexible rotary shaft ❸ and flexible connector ❹.
8) Select the USE mode.
9) Mount the arm assy gear ❷ and fix with the lock washer ❶.
10) Referring to 3-2, mount the RL base assembly and retainer.
11) Referring to 3-1, mount the LED base.
12) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Using the mode selector, confirm that loading and unloading are performed smoothly.

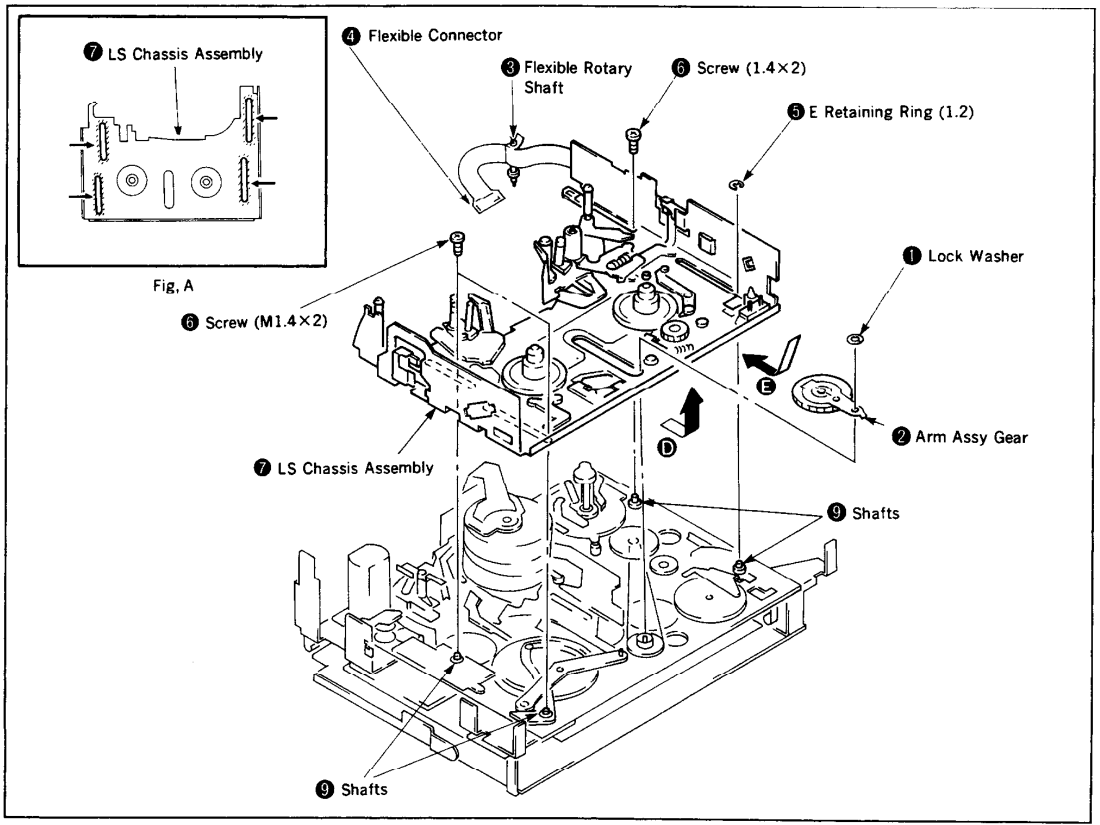


Fig. 14

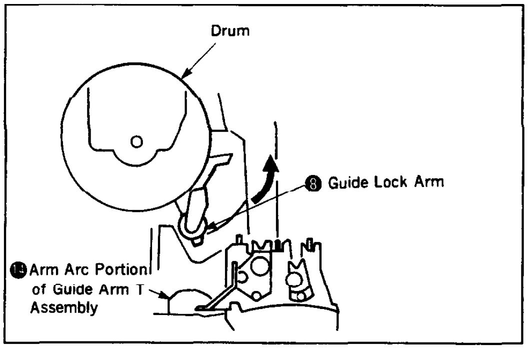

Drum
⑧ Guide Lock Arm
⑭ Arm Arc Portion of Guide Arm T Assembly

Fig. 15

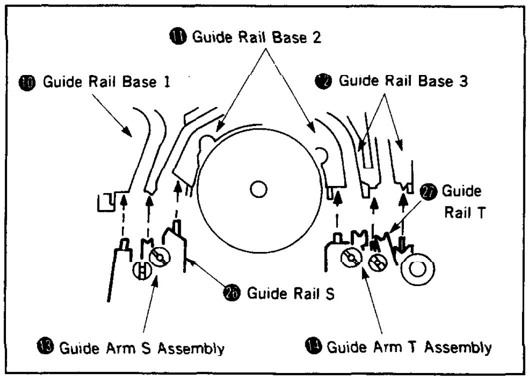

⑪ Guide Rail Base 2
⑩ Guide Rail Base 1
⑫ Guide Rail Base 3
㉗ Guide Rail T
㉖ Guide Rail S
⑬ Guide Arm S Assembly
⑭ Guide Arm T Assembly

Fig. 16

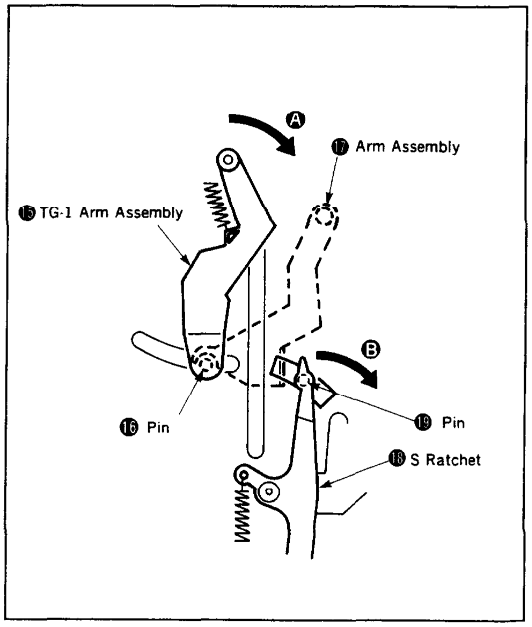

A
⑰ Arm Assembly
⑮ TG-1 Arm Assembly
B
⑯ Pin
⑲ Pin
⑱ S Ratchet

Fig. 17

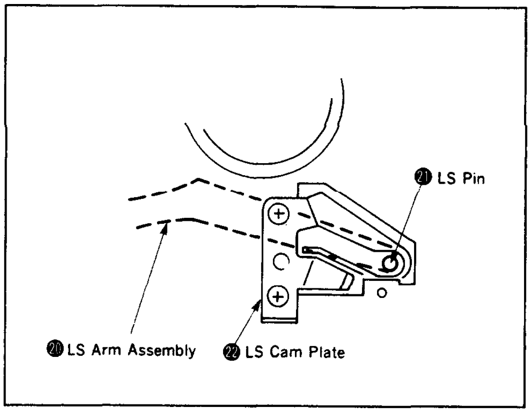

㉑ LS Pin
⑳ LS Arm Assembly
㉒ LS Cam Plate

Fig. 18

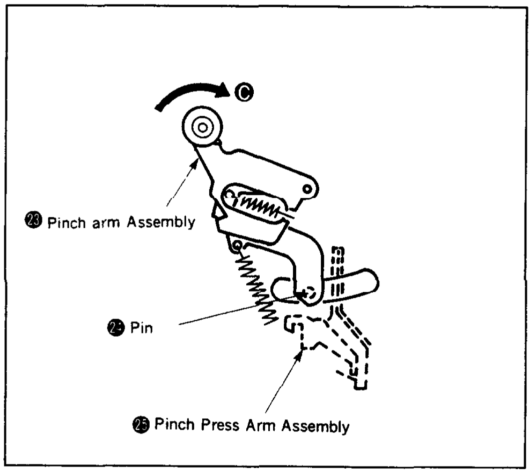

C
㉓ Pinch arm Assembly
㉔ Pin
㉕ Pinch Press Arm Assembly

Fig. 19

3-8 PINCH ARM ASSEMBLY (Fig. 20)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.
4) Remove the spring, tension ❸, and then, pinch arm assembly ❹.

2. Mounting

1) As shown in Fig. A, apply oil to the hole of the boss ❺ over one third of a drip up to half a drip.
2) put the rotation center of the pinch arm assembly in the boss ❺ hole, and the pin ❻ in the long hole.
3) Hook the spring, tension ❸ onto the upper groove of the pinch return spring shaft ❼.
4) Mount the lock washer ❷ from the back of the LS chassis assembly ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 1-1, mount the cassette compartment holder assembly.

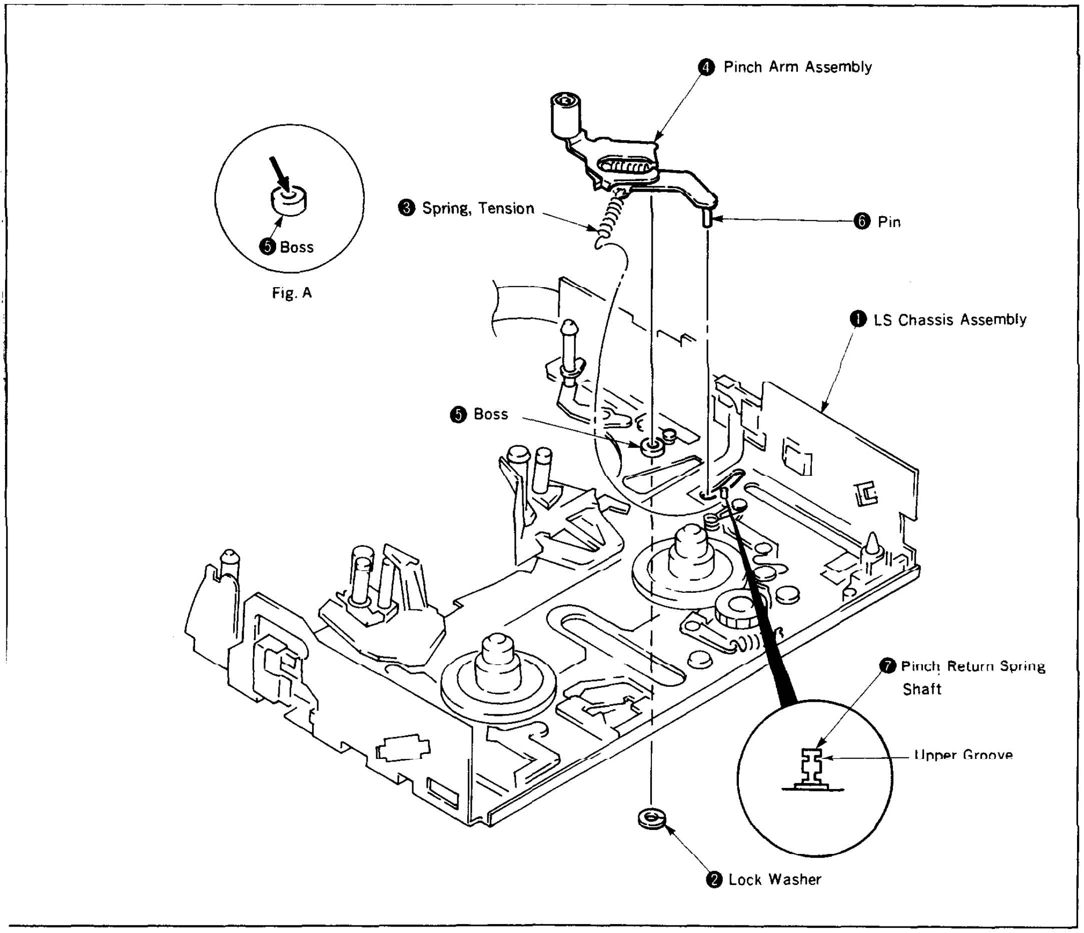

❹ Pinch Arm Assembly
❸ Spring, Tension
❺ Boss
Fig. A
❻ Pin
❶ LS Chassis Assembly
❺ Boss
❼ Pinch Return Spring Shaft
Upper Groove
❷ Lock Washer

Fig. 20

3-9 TG-11 ARM ASSEMBLY (Fig. 21)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.
4) Remove the TG-11 arm assembly ❸ and spring, torsion ❹.

Note : Be careful not to deform the TG-11 arm.

2. Mounting

1) As shown in Fig. A, apply oil to a boss hole over one third of a drip up a half a drip.
2) As shown in Fig. B, put the longer arm of the spring, torsion ❹ between the pinch arm boss ❺ and cam slider shaft ❽ of the LS chassis. Next, Hook the shorter arm of the spring, torsion ❹ around the pin ❻ of the TG-11 arm assembly ❸, rotate the TG-11 arm assembly and fix with the lock washer ❷. When this is done, see to it that the pin ❻ of the TG-11 arm assembly ❸ is located to the left side of the cam slider ❾ as shown in Fig. C.
3) Referring to 3-7, mount the LS chassis.
4) Referring to 1-1, mount the cassette compartment holder.

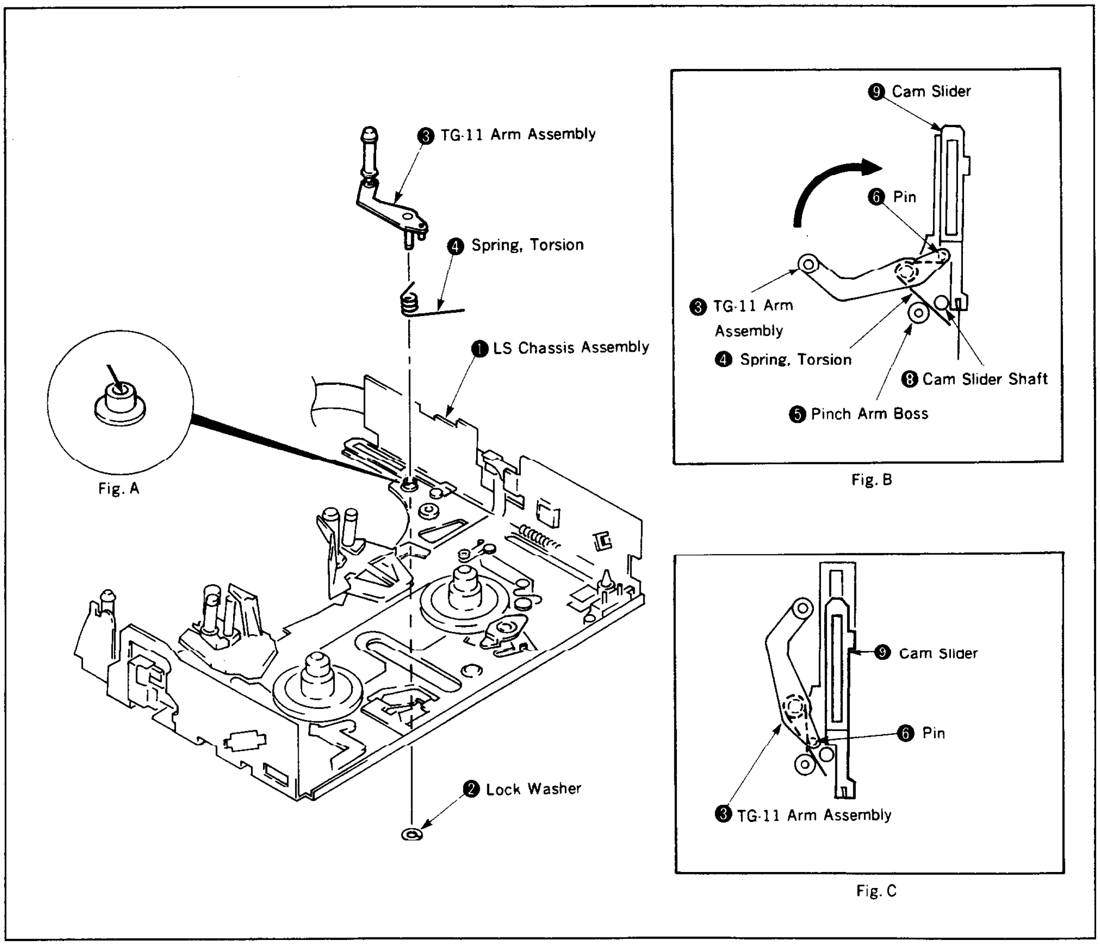

❸ TG-11 Arm Assembly
❹ Spring, Torsion
❶ LS Chassis Assembly
❷ Lock Washer
Fig. A
❾ Cam Slider
❻ Pin
❸ TG-11 Arm Assembly
❹ Spring, Torsion
❽ Cam Slider Shaft
❺ Pinch Arm Boss
Fig. B
❾ Cam Slider
❻ Pin
❸ TG-11 Arm Assembly
Fig. C

Fig. 21

3-10 TG-1 ARM ASSEMBLY (Fig. 22)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis.
3) Referring to 3-3, remove the table assy, reel, supply.
4) Remove the lock washer ❷ from the back of the LS chassis assembly ❶.
5) Remove the spring, tension ❸. Remove the string joint ❹ from the dowel ❺ of the TG-1 adjustment block ❾ by rotating it in a direction of the arrow Ⓐ as shown in Fig. C.
6) Remove the TG-1 arm assembly ❻.

Note : Dismount and remount the string joint ❹ carefully not to deform it.

2. Mounting

1) As shown in Fig. A, apply oil to the hole of the boss ❼ over one third of a drip up to half a drip.
2) As shown in Fig. C, mount the string joint ❹ to the TG-1 adjustment block ❾ in the opposite direction of the arrow Ⓐ.
3) Mount the TG-1 arm assembly ❻ to the boss ❼ in such a manner not to touch the guide and insert the pin ❽ into the long hole.
4) Hook the spring, tension ❸ onto the position shown in Fig. B.
5) Mount the lock washer ❷ from the back of the LS chassis assembly ❶.
6) Referring to 3-3, mount the table assy, reel, supply.
7) Referring to 3-7, mount the LS chassis assembly.
8) Referring to 1-1, mount the cassette compartment holder assembly.

Note : Referring to 3-27, adjust a tension regulator position.
Note : Referring to 3-28. adjust a FWD back tension.

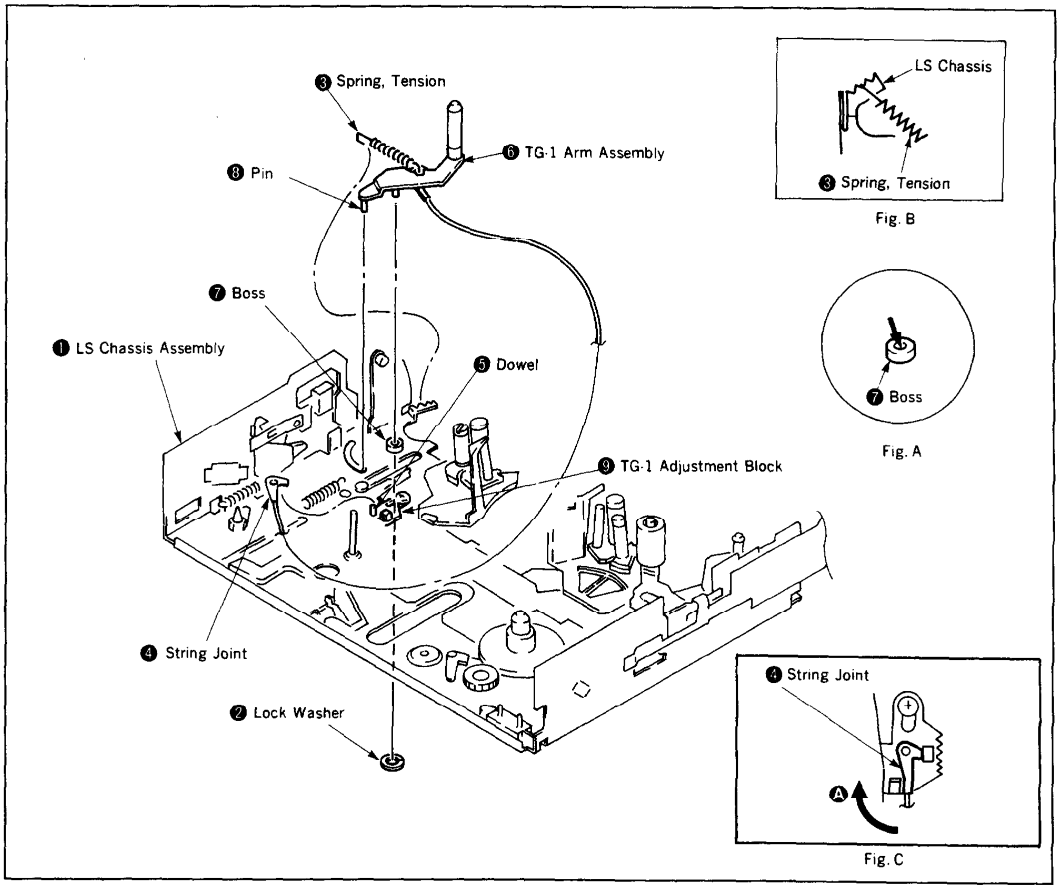

❸ Spring, Tension
❻ TG-1 Arm Assembly
❽ Pin
❼ Boss
❶ LS Chassis Assembly
❺ Dowel
❾ TG-1 Adjustment Block
❹ String Joint
❷ Lock Washer
LS Chassis
❸ Spring, Tension
Fig. B
❼ Boss
Fig. A
❹ String Joint
Ⓐ
Fig. C

Fig. 22

3-11 STRING JOINT (Fig. 23)

1. Removal

1) Referring to 3-10, remove the TG-1 arm assembly ❶.
2) Remove the joint holder ❷, and then, string assembly ❸.

2. Mounting

1) Put the dowel ❹ of the TG-1 arm assembly ❶ into the hole of the string assembly ❸ and mount the joint holder ❷. (Apply screw lock between the joint holder and TG-1 arm assembly.)
2) Referring to 3-10, mount the TG-1 arm assembly ❶.

Note : Be careful not to bend the string assembly ❸.

Note : Do not touch the guide ※.

Note : The joint holder ❷, which was removed once, must not be used again.

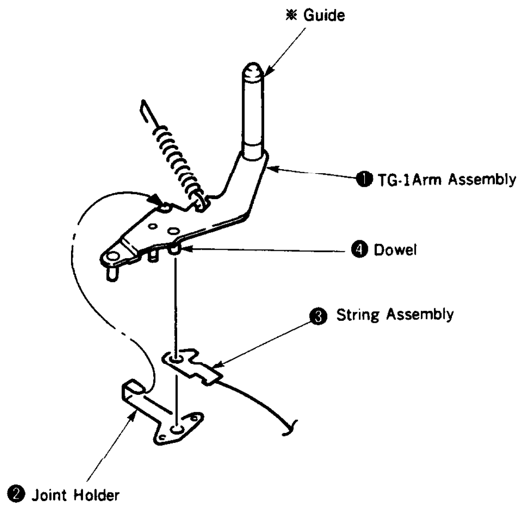

※ Guide
❶ TG-1Arm Assembly
❹ Dowel
❸ String Assembly
❷ Joint Holder

Fig. 23

3-12 GUIDE ARM T ASSEMBLY, GUIDE ARM S ASSEMBLY

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Rotate the guide arm T assembly ❶ and guide arm S assembly in arrow directions respectively, align their shafts ❸ with the holes as shown in Fig. A, and remove them. (Fig. 24)

Note : Do not touch the guide ※. (Fig. 25 and Fig. 26)

2. Mounting

1) After inserting the guide arn T and S assemblies in the reverse order of removal, rotate them in the opposite directions of the arrows respectively.
2) Fit the TG-7 base assembly ❺ and TG-9 base assembly ❻ in the grooves of the guide rail T ❹. (Fig. 25)
3) Put the shaft ● flange in the long groove of the guide rail S ❽, and fit the TG-4 base assembly ❾ and TG-6 base assembly ● into the right and left grooves of the guide rail S ❽ respectively.

   When this is done, see to it that the flat spring of the TG-6 base assembly❿ is located below the guide rail S ❽ as shown in Fig. B. (Fig.26)
4) Referring to 3-7, mount the LS chassis assembly.
5) Referring to 1-1, mount the cassette compartment holder assembly.

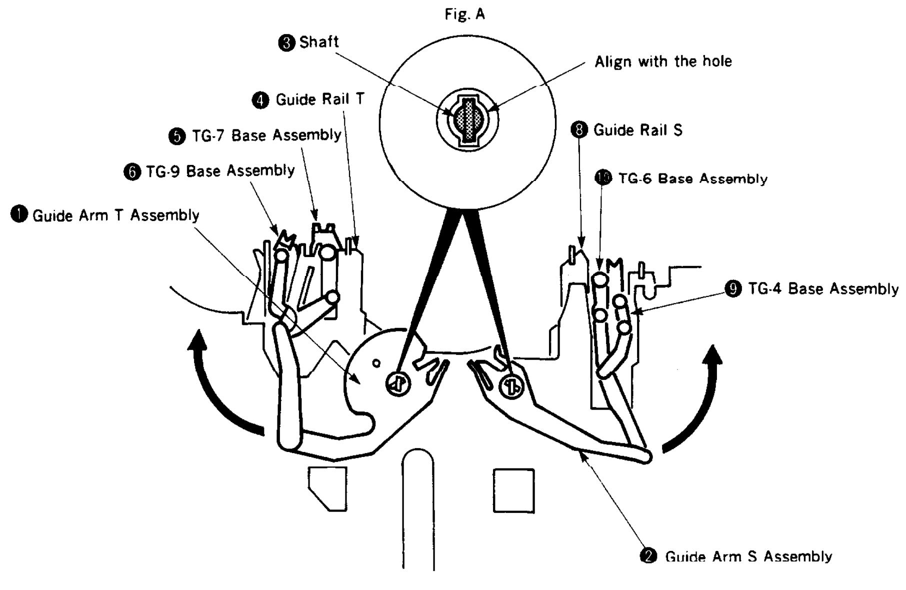


Fig. A
❸ Shaft
Align with the hole
❹ Guide Rail T
❺ TG-7 Base Assembly
❻ TG-9 Base Assembly
❶ Guide Arm T Assembly
❽ Guide Rail S
❿ TG-6 Base Assembly
❾ TG-4 Base Assembly
❷ Guide Arm S Assembly

LS Chassis Assembly Viewed from Back

Fig. 24

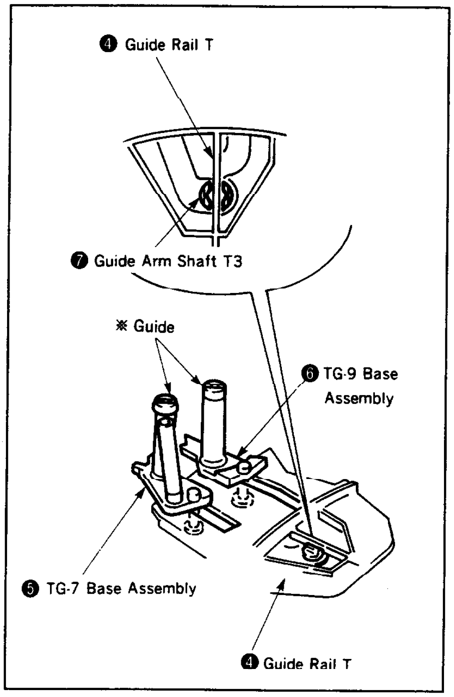

❹ Guide Rail T
❼ Guide Arm Shaft T3
※ Guide
❻ TG-9 Base Assembly
❺ TG-7 Base Assembly
❹ Guide Rail T

Fig. 25

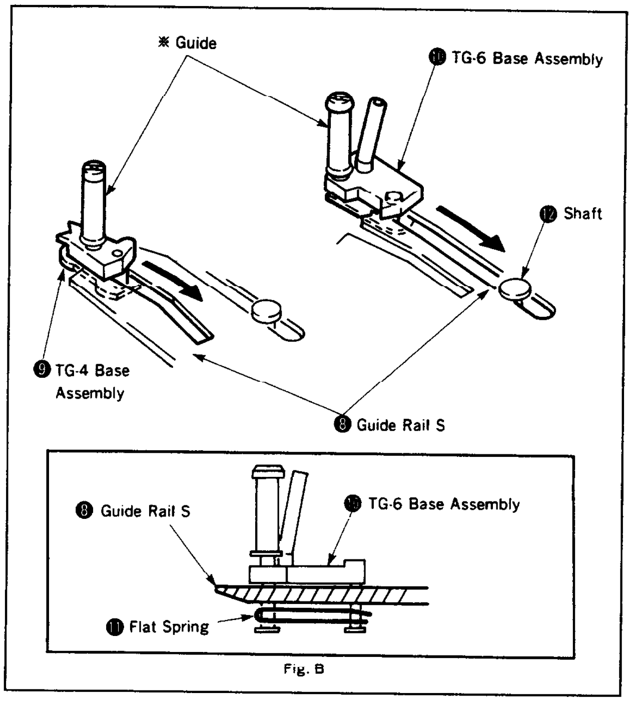

※ Guide
❿ TG-6 Base Assembly
⓬ Shaft
❾ TG-4 Base Assembly
❽ Guide Rail S
❽ Guide Rail S
❿ TG-6 Base Assembly
⓫ Flat Spring
Fig. B

Fig. 26

3-13 PINCH PRESS ARM ASSEMBLY (Fig. 27)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis.
3) Remove the screw ●, and then, pinch press arm assembly ❷.

2. Mounting

1) As shown in A, apply half a drip of molyton grease to an arrowindicated part of a boss hole.
2) As shown in Fig. B, apply half a drip of molyton grease each to the pinch press arm assembly ❷ at 3 places.
3) Put the pin ❹ of the pinch press arm assembly ❷ in the groove of the cam B ❸.
4) Fix. with the screw ❶.
5) Referring to 3-7, mount the LS chassis assembly.
6) Referring to 1-1, mount the cassette compartment holder assembly.

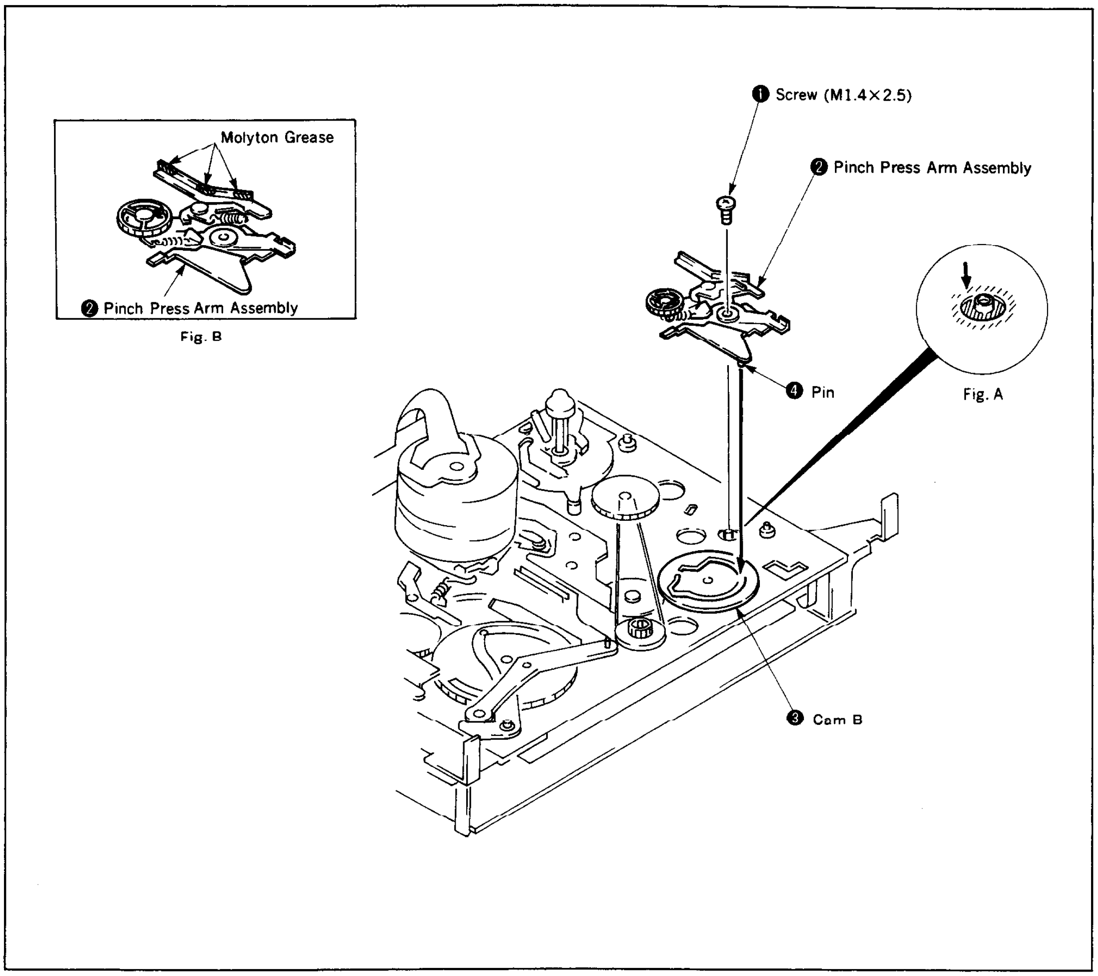

❶ Screw (M1.4×2.5)
❷ Pinch Press Arm Assembly
Molyton Grease
❷ Pinch Press Arm Assembly
Fig. B
Fig. A
❹ Pin
❸ Cam B

Fig. 27

3-14 GL SLIDER ASSEBLY (Fig. 28)

1. Removal

1) Refering to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis assembly.
3) Referring to 3-15, remove the cam A.
4) Shift the GL slider assembly ❹ in a direction of the arrowⒶ.
5) Remove the screw ❶, and then, GL support S ❷.
6) Remove the lock washer ❸, and then, GL slider assembly ❹.

2. Mounting

1) Fit the claw ❺ of the GL slider assembly ❹ in the groove of the GL support T ❼, and put the roller ❻ in the long hole of the chassis.
2) Stop with the lock washer ❸.
3) Shift the GL slider assembly ❹ in a direction of the arrowⒶ.
4) Fit the claw ❽ of the GL support ❷ in the part of the chassis marked with ※ and place the dowel ❾ in the hole of the chassis.
5) Fix with the screw ❶.
6) Referring to 3-7, mount the LS chassis assembly.
7) Referring to 1-1, mount the cassette compartment holder assembly.

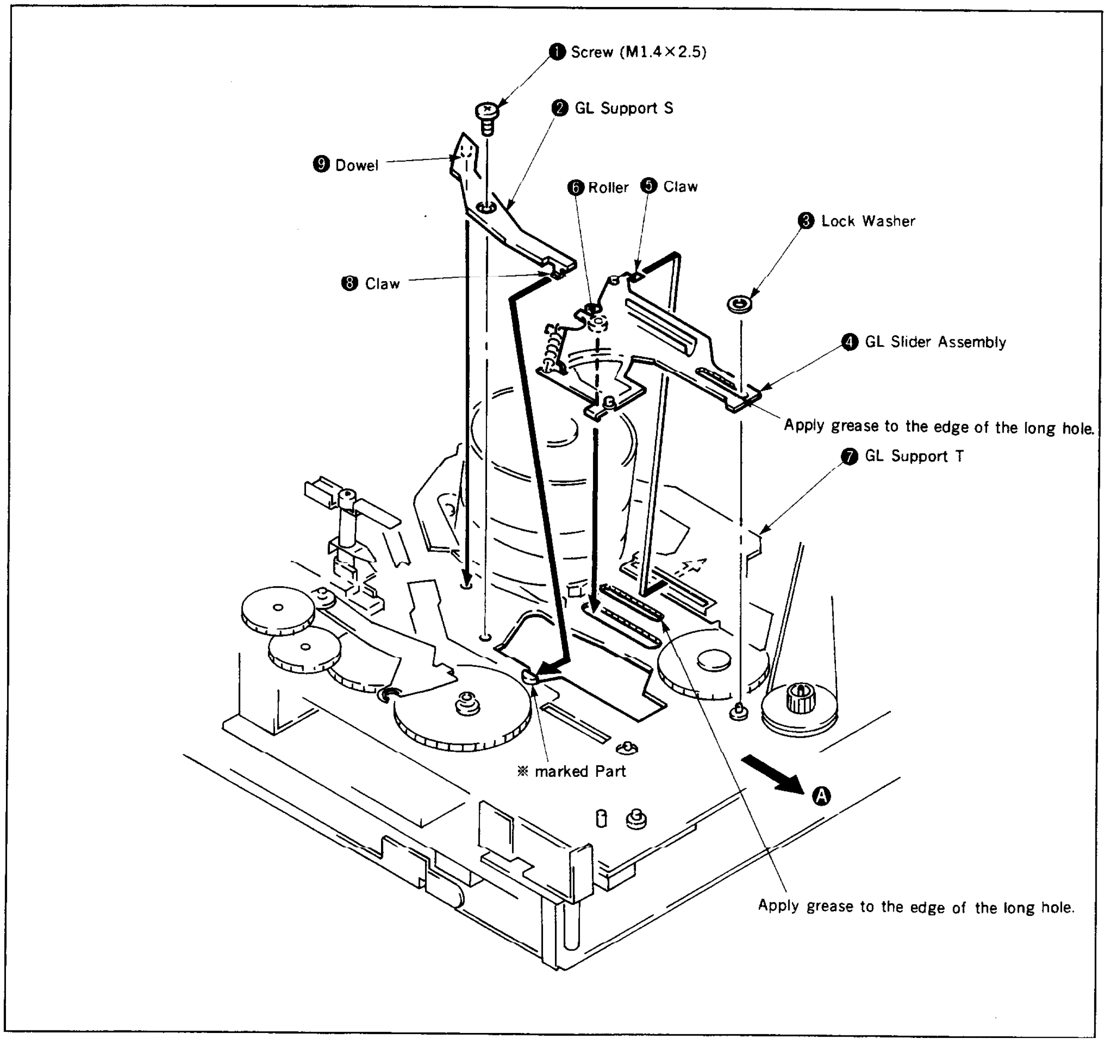

❶ Screw (M1.4×2.5)
❷ GL Support S
❾ Dowel
❻ Roller
❺ Claw
❸ Lock Washer
❽ Claw
❹ GL Slider Assembly
Apply grease to the edge of the long hole.
❼ GL Support T
※ marked Part
Ⓐ
Apply grease to the edge of the long hole.

Fig. 28

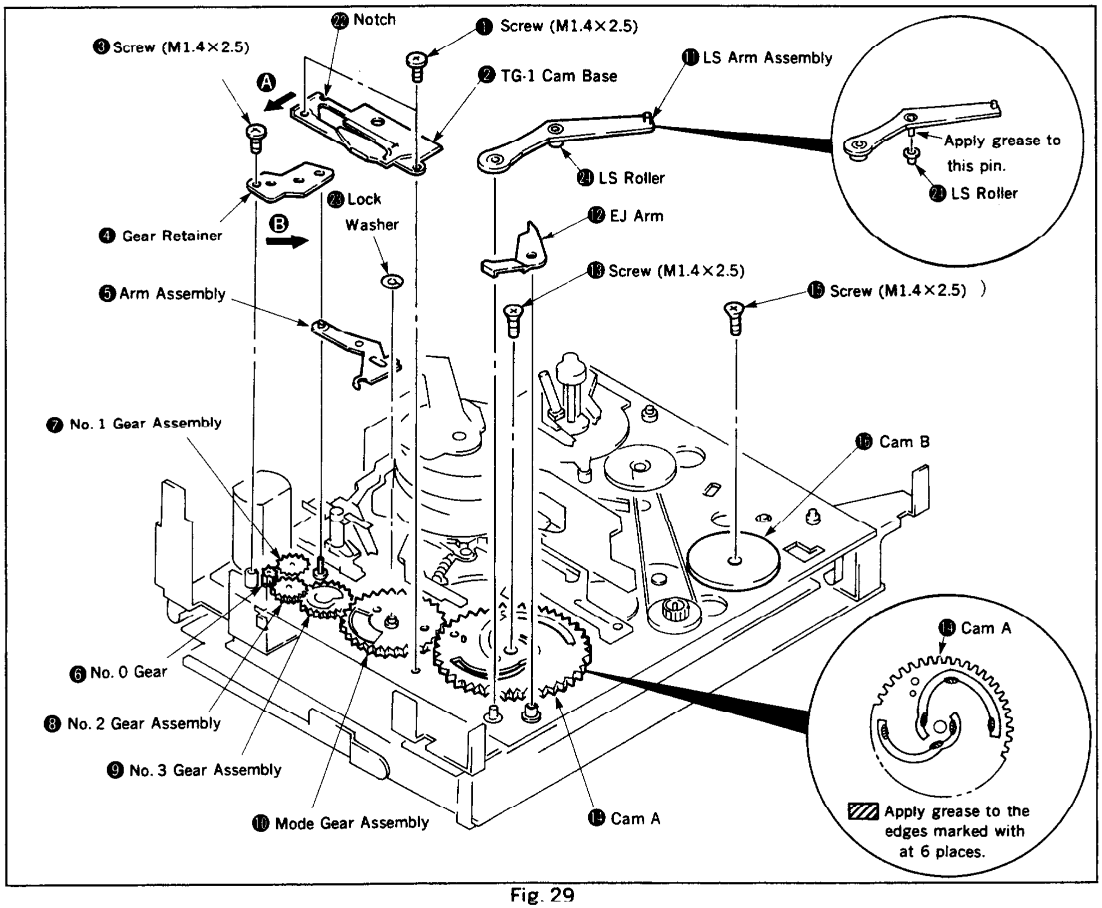
3-15 PHASE ADJUSTMENT(Fig. 29)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis. (Wen this is done, one of the BLANK, REC and READY modes must be selected.)
3) Remove the two screws ①, and remove the TG-1 cam base ② by moving it in a direction of the arrowⒶ. (Remove the notch ㉒from the groove of the No. 3 gear shaft.)
4) Remove the screw ③, and remove the gear retainer ④ by sliding it in a direction of the arrowⒷ.
5) Remove the arm assembly ⑤, No. 0 gear ⑥, No. 1 gear assembly ⑦, No. 2 gear assembly ⑧, No. 3 gear assembly ⑨, lock washer㉓, and then, mode gear assembly⑩, respectively.
6) Being careful not to lose the LS roller㉑of the LS arm, remove the LS arm assembly⑪and EJ arm⑫, respectively.
7) Remove the screw⑬, and then, cam A⑭.
8) Referring to 3-13 3), remove the pinch press arm assembly.
9) Remove the screw⑮, and then, cam B⑯.

2. Adjustment and Mounting

1) Face the holeⓐ of the mode gear assembly⑩to a direction of the arrowⒶ, move the GL slider assembly⑰in a direction of the arrowⒷ, apply molyton grease to the pin of the GL slider assembly⑰, and mount the LS roller⑱. (Fig. 30)
2) Set a direction of the cam A⑭so that the holeⓒ of the cam A ⑭will be aligned with the hole of the mechanical chassis. (Fig. 31)
3) Move the GL slider⑰so that the LS roller⑱will be placed into the grooveⓓ of the cam A⑭. At the same time, engage the mode gear assembly⑩with the gear of the relay gear A⑲, and mount thc cam A⑭. Insert a stick of about ϕ1.5mm in the hole ⓒ of the cam A⑭. (Fig. 31)
4) Align the holeⓔ of the cam B⑯with the hole of the mechanical chassis. At the same time, engage the relay gear B⑳ with the gear and mount it. (Fig. 32)
5) Referring to 3-13, mount the pinch press arm assembly.
6) Align the holeⓕ of the No. 3 gear assembly ⑨ with the hole of the mechanical chassis, and at the same time, engage the mode gear assembly⑩with the gear to mount. (Fig. 33)
7) Mount the No. 2 gear assembly ⑧, No. 1 gear assembly ⑦ and No. 0 gear ⑥ in that order. Mount the arm assembly ⑤ to the shaft and put the pin㉑in the groove of the No. 3 gear assembly ⑨, (Fig. 34)
8) Put the TG-1 cam base ② in place, fit the notch㉒to the shaft and shift it in an arrow direction, and mount the screws ① and ①′in that order. (Fig. 35)
9) Put the gear retainer ④ in place, slide it in an arrow direction and fix it with the screw ③. (Fig. 36)
10) Seeing to it that the EJ arm⑫and the LS roller㉑of the LS arm assembly⑪are put in the grooveⓖ of the cam A⑭, mount them in that order. (Fig. 29 and Fig. 30)
11) Referring to 3-7, mount the LS chassis assembly.
12) Referring to 1-1, mount the cassette compartment holder assembly.



㉒ Notch
① Screw (M1.4×2.5)
③ Screw (M1.4×2.5)
Ⓐ
② TG-1 Cam Base
⑪ LS Arm Assembly
Apply grease to this pin.
㉑ LS Roller
㉑ LS Roller
㉓ Lock Washer
⑫ EJ Arm
④ Gear Retainer
Ⓑ
⑬ Screw (M1.4×2.5)
⑮ Screw (M1.4×2.5)
⑤ Arm Assembly
⑦ No. 1 Gear Assembly
⑯ Cam B
⑭ Cam A
⑥ No. 0 Gear
⑧ No. 2 Gear Assembly
⑨ No. 3 Gear Assembly
⑩ Mode Gear Assembly
⑭ Cam A
▨ Apply grease to the edges marked with at 6 places.

Fig. 29

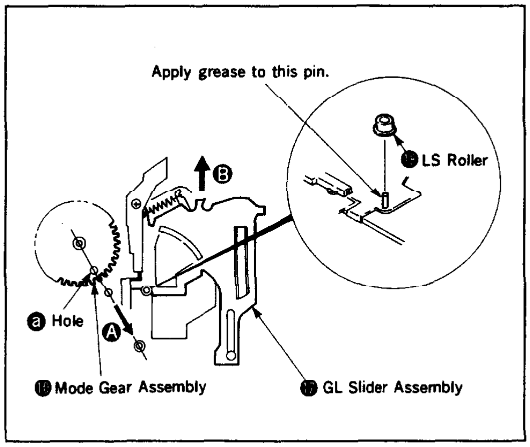

Apply grease to this pin.
⑱ LS Roller
Ⓑ
ⓐ Hole
Ⓐ
⑩ Mode Gear Assembly
⑰ GL Slider Assembly

Fig. 30

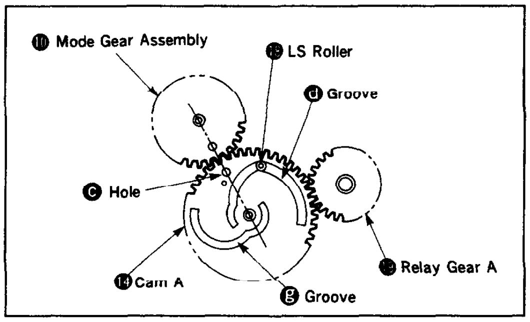

⑩ Mode Gear Assembly
⑱ LS Roller
ⓓ Groove
ⓒ Hole
⑲ Relay Gear A
⑭ Cam A
ⓖ Groove

Fig. 31

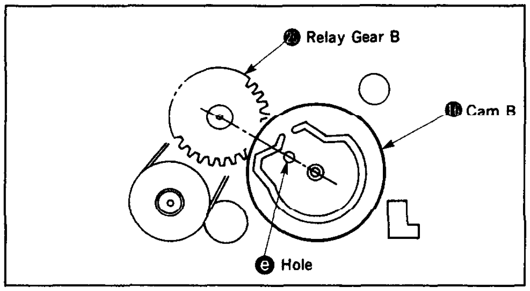

⑳ Relay Gear B
⑯ Cam B
ⓔ Hole

Fig. 32

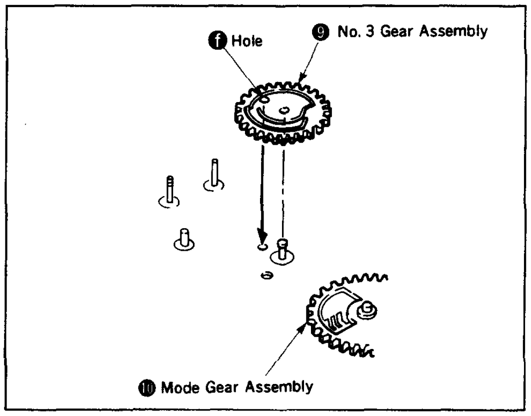

ⓕ Hole
⑨ No. 3 Gear Assembly
⑩ Mode Gear Assembly

Fig. 33

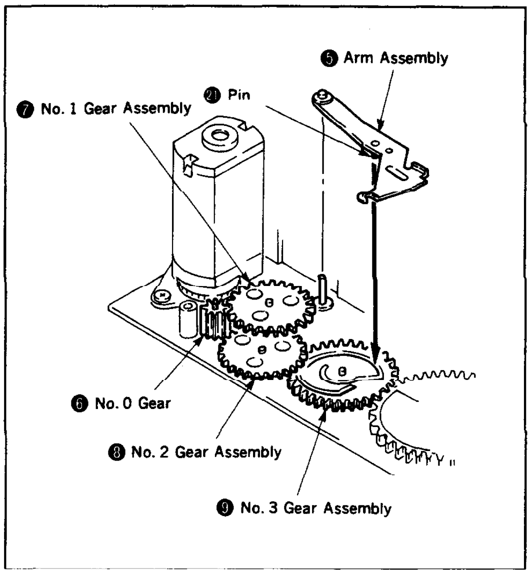

⑤ Arm Assembly
㉑ Pin
⑦ No. 1 Gear Assembly
⑥ No. 0 Gear
⑧ No. 2 Gear Assembly
⑨ No. 3 Gear Assembly

Fig. 34

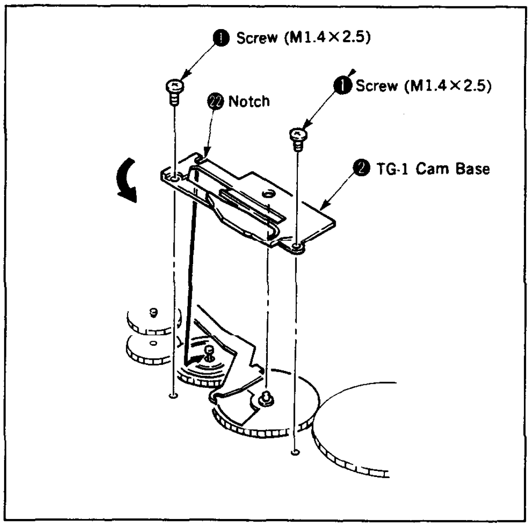

① Screw (M1.4×2.5)
① Screw (M1.4×2.5)
㉒ Notch
② TG-1 Cam Base

Fig. 35

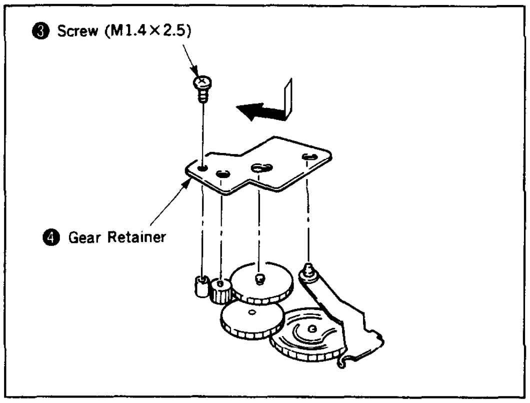

③ Screw (M1.4×2.5)
④ Gear Retainer

Fig. 36

3-16 GEAR TRAIN OPERATION CHECK (Fig. 37)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-7, remove the LS chassis.
3) Referring to 3-17, remove the loading motor.

2. Check

1) Insert the tip of tweezers into the hole a of the cam A ❶.
2) Rotate the cam A ❶ by about two thirds of a turn in a direction of the arrow Ⓐ, and then, in a direction of the arrow Ⓑ by the same amount. Repeat this 3 times.
3) When this is done, check that each, gear, the GL slider assembly and LS arm assembly rotate smoothly, and that no load is applied to them.
4) At the same time, check that the LS roller ❷ is located almost at the end point of the groove of the cam A ❶ when the gear train comes into contact with the stoppers at both ends.

Note : When rotating the cam A ❶ with the tip of tweezers, etc., be careful not to scratch the mechanical chassis.

3. Mounting

1) Referring to 3-17, mount the loading motor.
2) Referring to 3-7, mount the LS chassis assembly.
3) Referring to 1-1, mount the cassette compartment holder assembly.

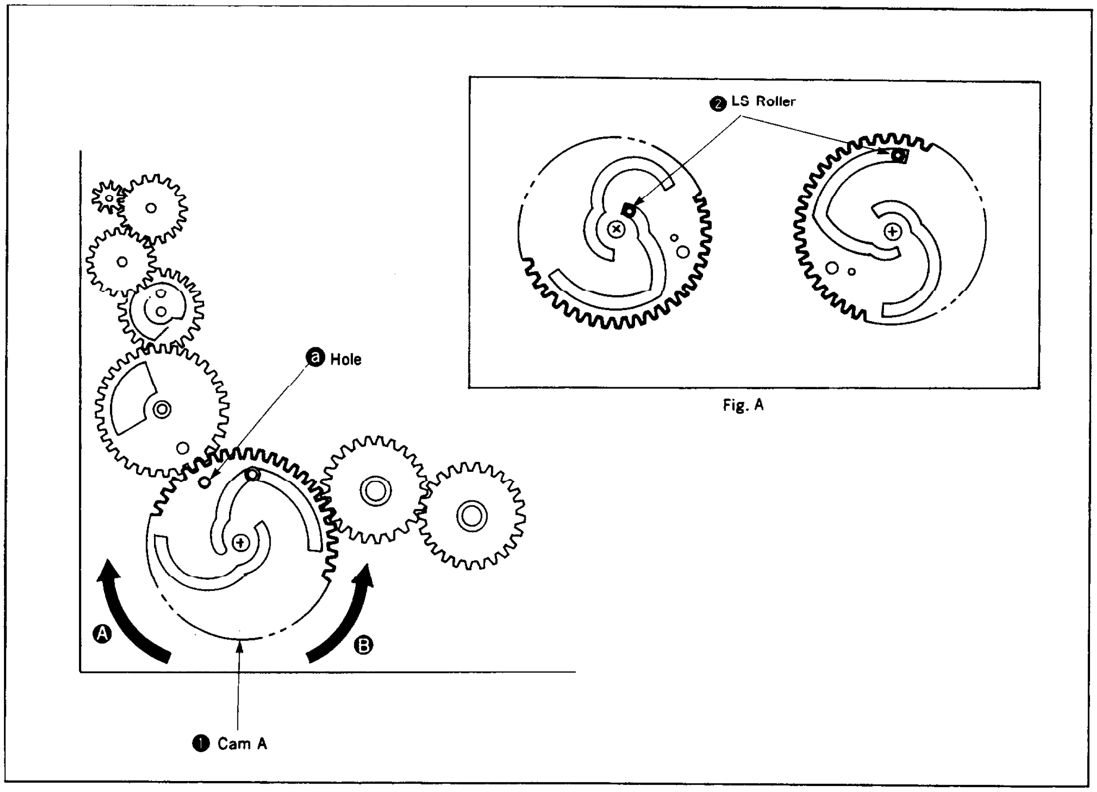


Fig. 37

3-17 LOADING MOTOR ASSEMBLY (Fig. 38)

1. Removal

1) Remove the LB-12 board.
2) Remove the connector ❶.
3) Remove the screws ❷ and ❸, and remove the loading motor assembly ❹ in an arrow direction.

2. Mounting

1) Put the pin ❺ of the loading motor assemmbly ❹ in the hole of the mechanical chassis, and mount it with the screws ❷ and ❸ in that order.
2) Mount the connector ❶.
3) Mount the LB-12 board.

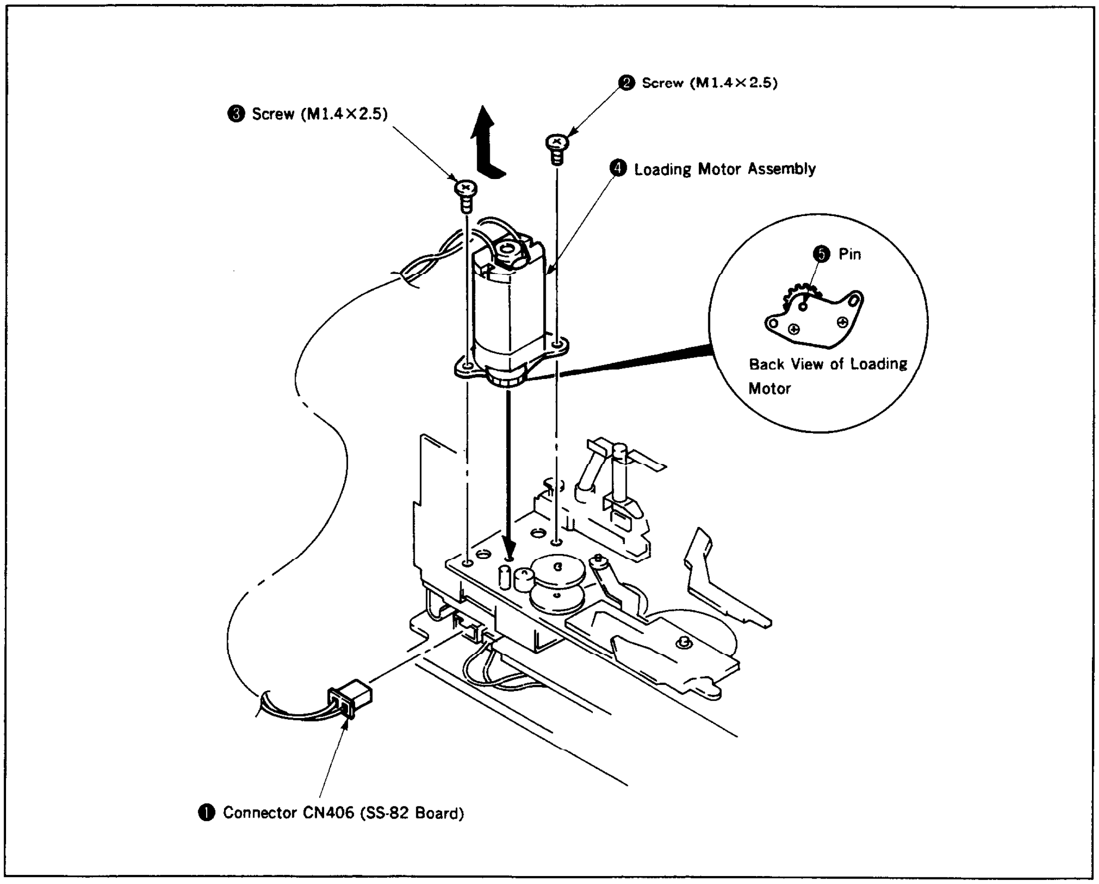

❷ Screw (M1.4×2.5)
❸ Screw (M1.4×2.5)
❹ Loading Motor Assembly
❺ Pin
Back View of Loading Motor
❶ Connector CN406 (SS-82 Board)

Fig. 38

3-18 GUIDE RAIL BASE 1 ASSEMBLY (Fig. 39)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Unskate the LS chassis a little.
3) Remove the two screws ●, and then, guide rail base 1 assembly ●.

Note : Be careful not to lose the spacers inserted in the parts ⓐ and ⓑ of the guide rail base 1 assembly ●. (Fig. B)

2. Mounting

1) Apply half a drip each of molyton grease at 2 places on the back of the guide rail base 1 assembly. (Fig. A)
2) Put the pin ● of the guide rail base 1 assembly ● in the notch of the chassis, and tighten the two screws ● with a torgue of 0.6kg•cm.
3) Referring to 1-1, mount the cassette compartment holder assembly.

Note1 : Mount paying attention to the number of spacers inserted and their locations.

Note2 : When tightening the screws, be careful not to bend the TG-2 upper flange ● with a screwdriver bit.

Note3 : Note that the part c of the guide rail base 1 assembly is easily broken. (Fig. B)

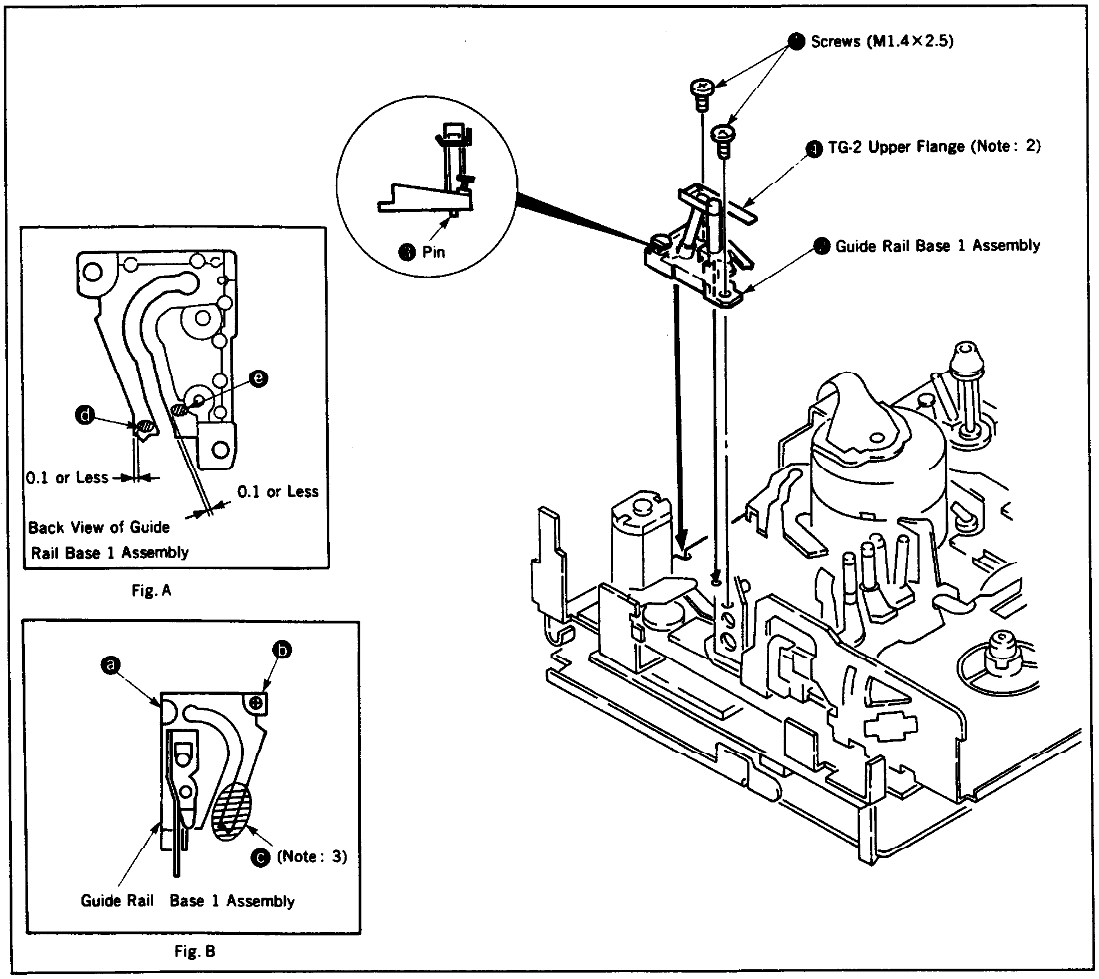

● Screws (M1.4×2.5)
● TG-2 Upper Flange (Note : 2)
● Guide Rail Base 1 Assembly
● Pin
ⓔ
ⓓ
0.1 or Less
0.1 or Less
Back View of Guide Rail Base 1 Assembly
Fig. A
ⓐ
ⓑ
ⓒ (Note : 3)
Guide Rail Base 1 Assembly
Fig. B

図39.

3-19 GUIDE RAIL BASE 2 ASSEMBLY (Fig. 40)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to the Service Manual, open the board in the back of the mechanical chassis.
3) Remove the four screws ❶, and then, frame B assembly ❷ in a direction of the arrowⒶ.
4) Unskate the LS chassis a little.
5) Remove the two screws ❸, and then, guide rail base 2 assembly ❹ in a direction of the arrowⒷ.

Note : Be careful not to hit the drum with a screwdriver bit because the screws are located closed to a drum lead.

2. Mounting

1) Apply half a drip of molyton grease each to 4 places on the back of the guide rail base 2 assembly. (Fig. A)
2) As shown in Fig. B, apply the striking parts of the guide rail base 2 assembly ❹ to the lower drum, and slide in an arrow direction to fit.
3) Pushing the part ✱ of the guide rail base 2 assembly ❹ lightly in a direction of ⓔ (Fig. B), tighten the two screws ❸ with a torque of 0.8kg•cm.

Note : Note that the part f is easily broken.

4) Mount the frame B assembly with the four screws ❶.
5) Mount the opened board to the back of mechanical chassis.
6) Referring to 1-1, mount the cassette compartment holder assembly.

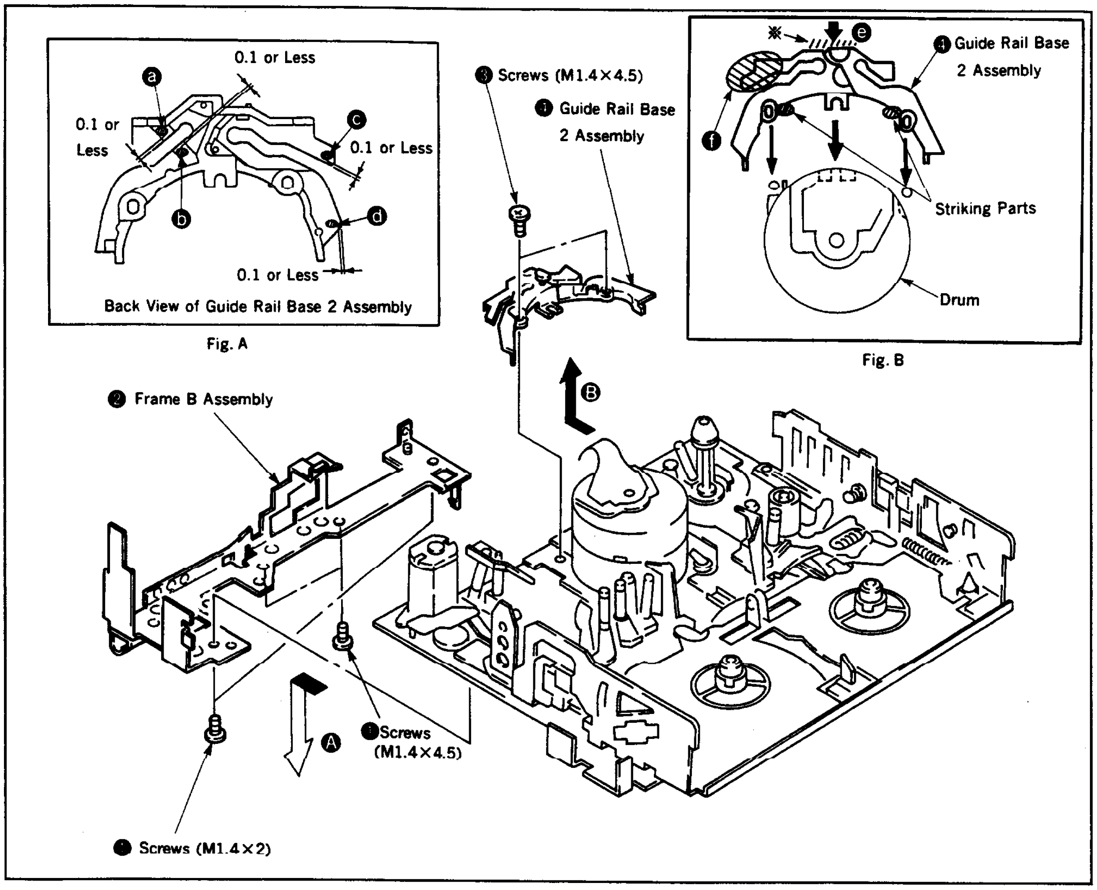

0.1 or Less
ⓐ
0.1 or Less
ⓒ
0.1 or Less
ⓑ
ⓓ
0.1 or Less
Back View of Guide Rail Base 2 Assembly
❸ Screws (M1.4×4.5)
❹ Guide Rail Base 2 Assembly
✱
ⓔ
❹ Guide Rail Base 2 Assembly
ⓕ
Striking Parts
Drum
❷ Frame B Assembly
Ⓑ
Ⓐ
❸ Screws (M1.4×4.5)
❶ Screws (M1.4×2)

Fig. A

Fig. B

Fig. 40

3-20 GUIDE RAIL BASE 3 ASSEMBLY (Fig. 41)

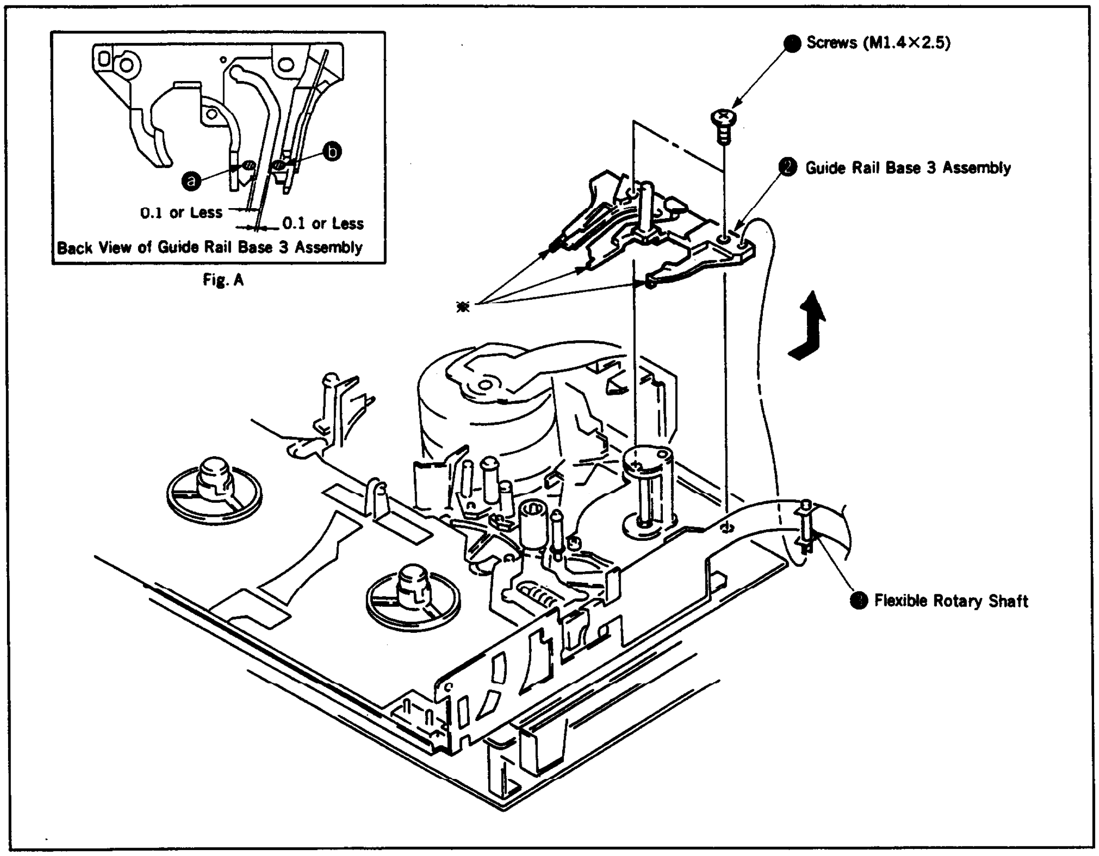
1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the flexible rotatry shaft ●.
3) Remove the two screws ●. Remove the guide rail base 3 assembly ● in an arrow direction, seeing to it that it does not hitch on the capstan housing.

Note : Handle the ✱ marked part carefully because it is easily broken.

2. Mounting

1) Apply half a drip of molyton grease each to 2 places on the back of the guide rail base 3 assembly ●. (Fig. A)
2) Mount the guide rail base 3 assembly ●, seeing to it that it does not hitch on the capstan housing.
3) Tighten the two screws ● with a torque of 0.6kg•cm.
4) Mount the flexible rotary shaft ●.
5) Referring to 1-1, mount the cassette compartment holder assembly.



ⓐ
ⓑ
0.1 or Less
0.1 or Less
Back View of Guide Rail Base 3 Assembly
Fig. A
● Screws (M1.4×2.5)
❷ Guide Rail Base 3 Assembly
✱
❸ Flexible Rotary Shaft

Fig. 41

3-21 CAPSTAN MOTOR ASSEMBLY (Fig. 42)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-20, remove the guide rail base 3 assembly.
3) Remove the connector ● of the capstan motor assembly ●.
4) Remove the screw ●. Disengaging the gear of the conversion gear assembly ●, remove the capstan motor assembly ● in an arrow direction (obliquely).

2. Mounting

1) As shown in Fig. A, incline the capstan motor assembly ● to engage the gear of the capstan motor assembly ● with that of the conversion gear assembly ●, and tighten the screw 3 with a torque of 1kg•cm.
   When this is done, be careful not to damage the gear of the conversion gear assembly ●.
2) Mount the connector 2 to the capstan motor assembly ●.
3) Referring to 3-20, mount the guide rail base 3 assembly.
4) Referring to 1-1, mount the cassette compartment holder assembly.

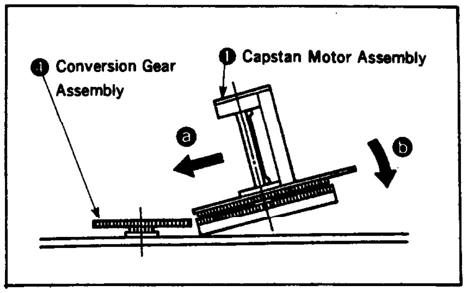

● Conversion Gear Assembly
❶ Capstan Motor Assembly
ⓐ
ⓑ

Fig. A

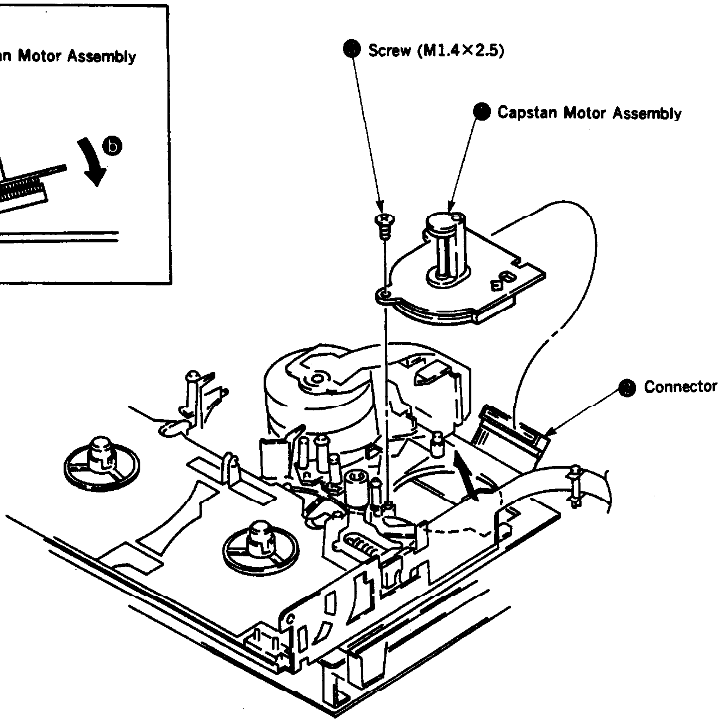

● Screw (M1.4×2.5)
● Capstan Motor Assembly
● Connector

Fig. 42

3-22 DRUM BASE ASSEMBLY (Fig. 42)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the motor flexible board ● from the board.
3) Referring to 3-19, remove the guide rail base 2 assembly.
4) Remove the two screws ●.
5) Draw out the head flexible board ● carefully from the hole of the mechanical chassis not to damage it, and remove the drum base assembly.

2. Mounting

1) Put the head flexible board ● in the hole of the mechanical chassis and put the positioning pins ● of the drum base in the holes of the mechanical chassis.
2) Tighten the two screws ● with a torque of 0.8kg•cm.
3) Referring to 3-19, mount the guide rail base 2 assembly.
4) Mount the motor flexible board ● to the board.
5) Referring to 1-1, mount the cassette compartment holder assembly.

Note : After mounting, make tape path adjustment in Section 4.

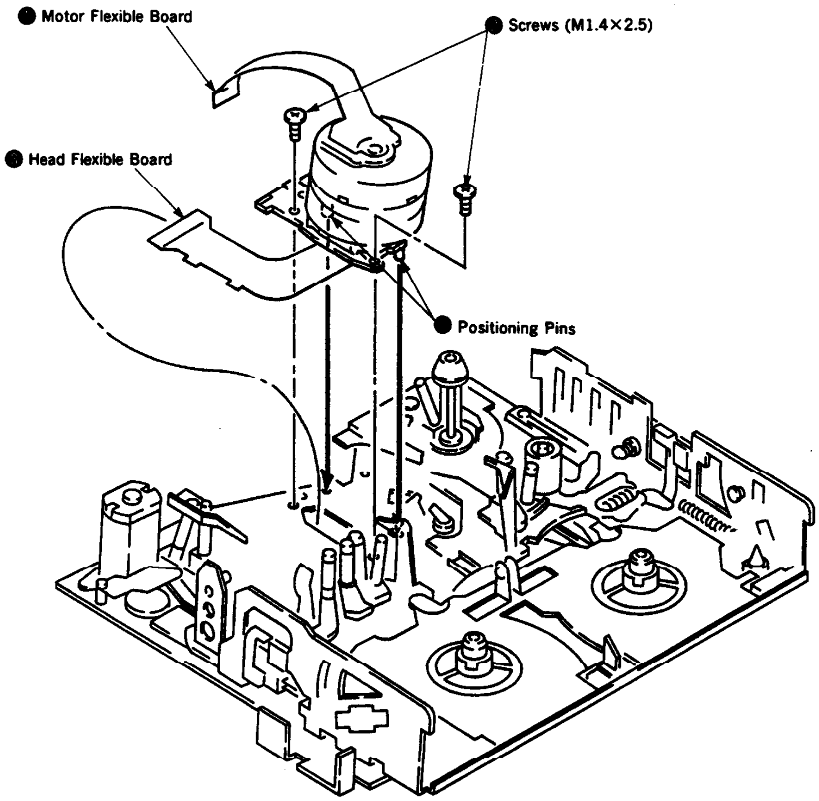


Fig. 42

3-23 DRUM ASSEMBLY (Fig. 43)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Remove the motor flexible board ● from the board.
3) Referring to 3-19, remove the guide rail base 2 assembly.
4) Remove the three screws ● from the back of the mechanical chassis.
5) Draw out the head flexible board ● carefully from the hole of the mechanical chassis not to damage it, and remove the drum assembly ●.

2. Mounting

1) Put the head flexible board ● in the hole of the mechanical chassis, and mount it so that the pins ⓑ and ⓓ will be put in the holes ⓐ and ⓒ shown in Fig. A.
2) Tighten the three screws ● with a torque of 0.5kg•cm.
3) Referring to 3-19, mount the guide rail base 2 assembly.
4) Mount the motor flexible board ● to the board.
5) Referring to 1-1, mount the cassette compartment holder assembly.

Note : After mounting, make tape path adjustment in Section 4.

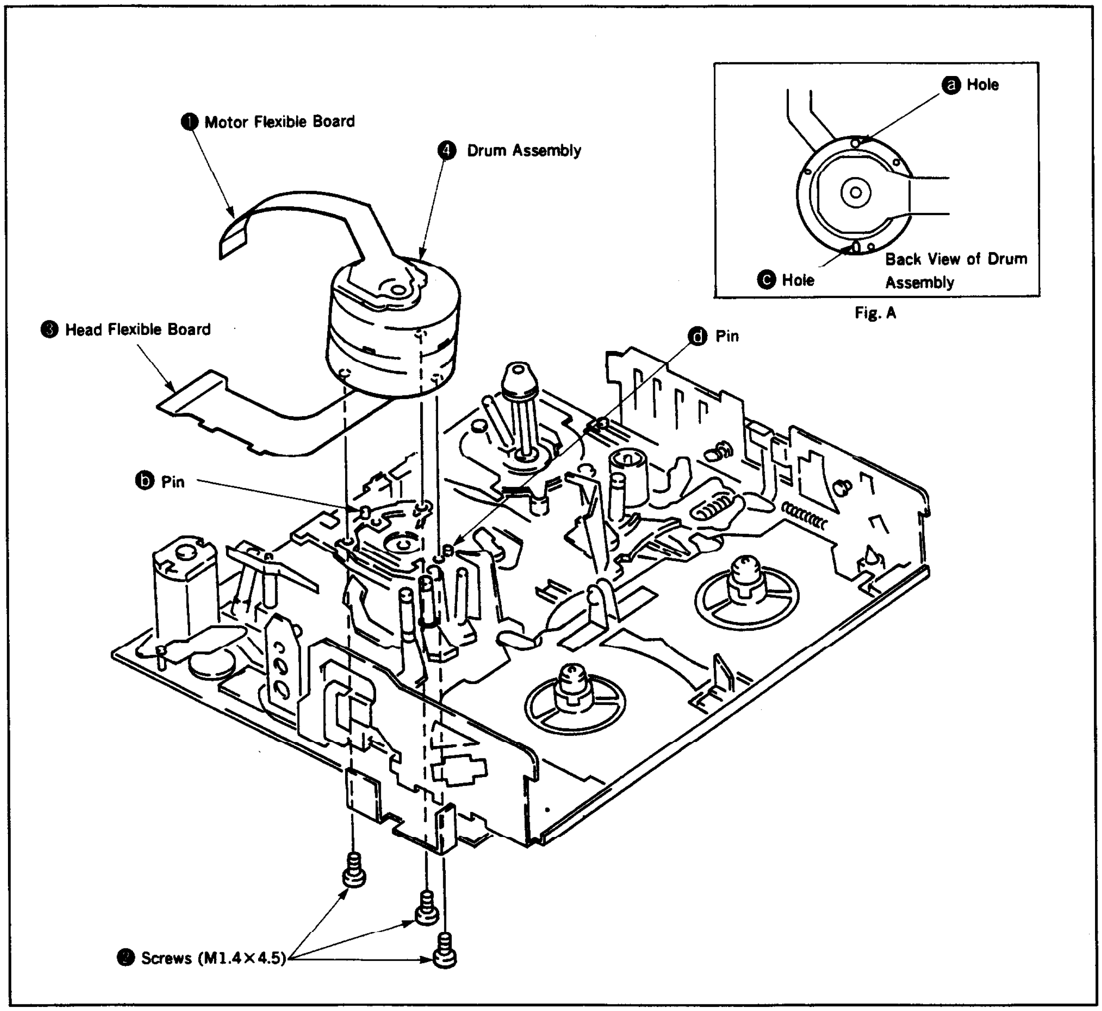
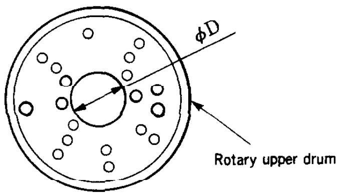

ⓐ Hole
❶ Motor Flexible Board
❹ Drum Assembly
Back View of Drum Assembly
ⓒ Hole
Fig. A
❸ Head Flexible Board
ⓓ Pin
ⓑ Pin
❷ Screws (M1.4×4.5)

Fig. 43

3-24 Replacement of Rotary Upper Drum Assembly

There are two rotary upper drum assembly types, depending on a color mark. (Fig. A in Fig. 45)



NTSC:

A-7049-190-A	Rotary upper drum assembly DGR-32-R-(1)
A-7049-189-A	Rotary upper drum assembly DGR-32-R-(2)

PAL:

A-7049-197-A	Rotary upper drum assembly DGR-37-R-(1)
A-7049-198-A	Rotary upper drum assembly DGR-37-R-(2)

Manufacturing upper dram

RANK	ϕD	MARK	
A	$\phi 8^{+0.0015}_{+0.001}$	Green	−01
B	$\phi 8^{+0.001}_{+0.0005}$	Green, Brown	
C	$\phi 8^{+0.0005}_{0}$	Black	
D	$\phi 8^{0}_{-0.0005}$	Black, Brown	
E	$\phi 8^{-0.0005}_{-0.001}$	Red	−11
F	$\phi 8^{-0.001}_{-0.0015}$	Red, Brown	
G	$\phi 8^{-0.0015}_{-0.002}$	Blue	
H	$\phi 8^{-0.002}_{-0.0025}$	Blue, Brown	

➡

Repairing upper drum

SUFFIX	ϕD	REMARKS	DRUM UPPER
−01	$\phi 8^{+0.001}_{+0.0005}$	Green, Brown	NTSC DGR-32-R-(1) PAL DGR-37-R-(1)
	$\phi 8^{+0.0005}_{0}$	Black	
−11	$\phi 8^{-0.001}_{-0.0015}$	Red, Brown	NTSC DGR-32-R-(2) PAL DGR-37-R-(2)
	$\phi 8^{-0.0015}_{-0.002}$	Blue	

1. Removal

1) Referring to 3-23, remove the drum assembly.
2) Remove the two screws ❶. (Fig. 44)
3) Hold the outlet (base) of the guide protector ❷, lift it up obliquely. In that state, hold the outer figure of the back yoke ❸ and remove it. (Fig. 44)

Note: Note that the flexible board and guide protector ❷ easily come off position because they are only pasted.

4) As shown in Fig. A, set the rotor earth spring ❹ around spring hook. (Fig. 44)
5) Using a drum screwdriver (Ref. No. J-11), remove the two hexagon socket bolts ❺, and then, rotary upper drum assembly ❻. (Fig. 45)
6) Using the drum screwdriver (Ref. No. J-11), remove the two hexagon socket bolts ❼, and then, rotor ❽. (Fig. A in Fig. 45)

2. Mounting

1) Clean the flange surface❿and the surface of the rotary upper drum assembly ❻ which comes into contact with it, and make sure that there is no dust or scratch. (Fig. 45)
2) Adjust a direction of the upper drum so that the head contact mold pin⓫will be put in the reference hole of the rotary upper drum assembly ❻, and push it in lightly. (Fig. 45)

Note: Check visually that the clearance between the upper and lower drums is about 0.05mm.

3) Using the drum screwdriver (Ref. No. J-11), tighten the two hexagon socket bolts ❺ (800g·cm) and rotate it with finger to make sure that there is no abnormality. (Fig. 45)
4) Put the pin ❾ of the rotor ❽ in the hole of the rotary upper drum assembly. Using the drum screwdriver (Ref. No. J-11), tighten the hexagon socket bolts ❼. (800g·cm) (Fig. A in Fig. 45)
5) Remove the rotor earth spring ❹ from the spring hook. Using tweezers, etc., hook it onto the groove of the stator boss⓬. (Fig. B in Fig. 45)

Note: See to it that the rotor earth spring ❹ is not located in the gap between the flange and stator.

6) Hold the outer figure of the back yoke ❸, put it on the inner step of the upper drum and insert the other side slowly. (Fig. B in Fig. 44)
7) Tighten the two screws ❶. (500g·cm) (Fig. 44)
8) Rotate the upper drum with finger to check that it runs smoothly.
9) Referring to 3-23, mount the drum assembly.

Note: After mounting, be sure to make tape path adjustment in Section 4.

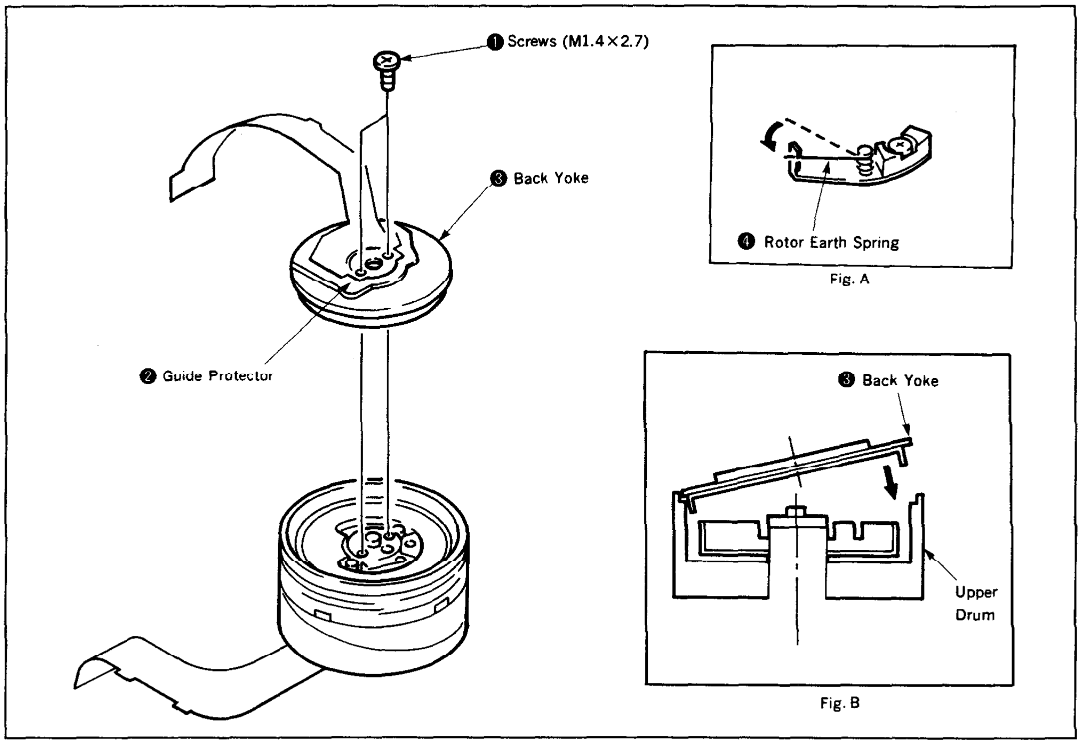

❶ Screws (M1.4×2.7)
❸ Back Yoke
❷ Guide Protector
❹ Rotor Earth Spring
Fig. A
❸ Back Yoke
Upper Drum
Fig. B

Fig. 44

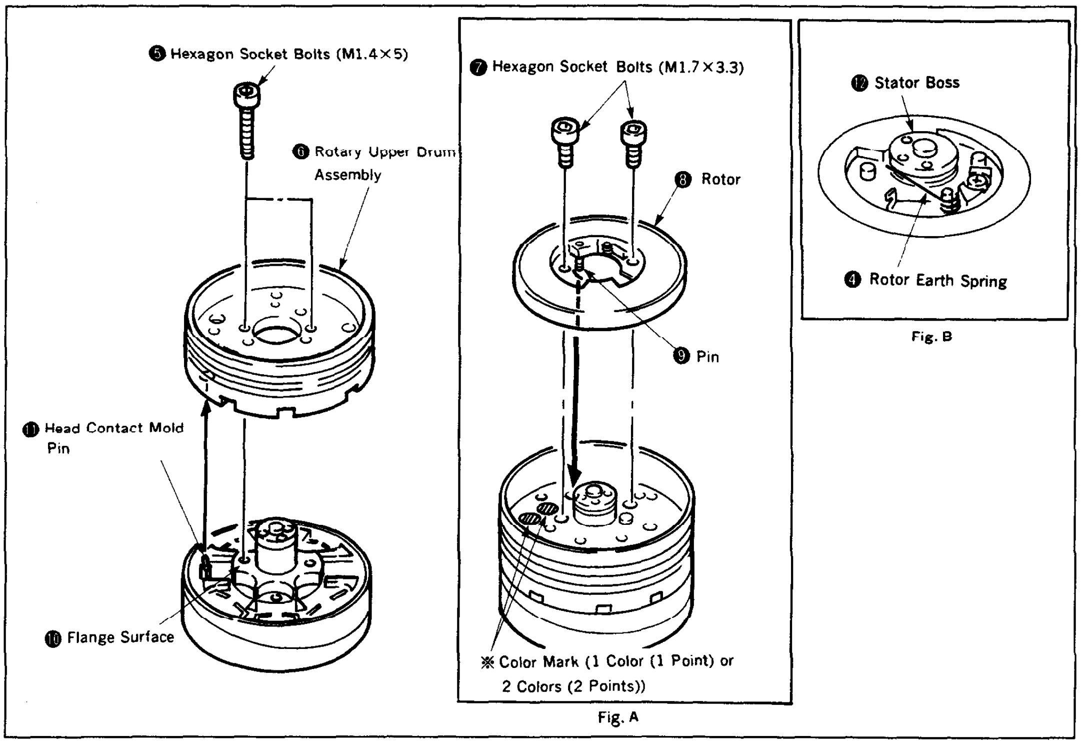

❺ Hexagon Socket Bolts (M1.4×5)
❻ Rotary Upper Drum Assembly
⓫ Head Contact Mold Pin
❿ Flange Surface
❼ Hexagon Socket Bolts (M1.7×3.3)
❽ Rotor
❾ Pin
※ Color Mark (1 Color (1 Point) or 2 Colors (2 Points))
Fig. A
⓬ Stator Boss
❹ Rotor Earth Spring
Fig. B

Fig. 45

3-25 REEL TABLE HEIGHT CHECK (Fig. 46)

1. Removal

1) Referring to 1-1, remove the cassette compartment holder assembly.
2) Referring to 3-1, remove the LED base.

2. Check

1) Using slide calipers, etc., check that distances from the LS chassis to the S reel table reel resting surface ❷ and T reel table reel resting surface ❸ are respectively as shown in below.

3. Mounting

1) Referring to 3-1, mount the LED base.
2) Referring to 1-1, mount the cassette compartment holder assembly.

A: $3.2^{+0.2}_{-0.15}$mm

B: 3.2±0.15mm

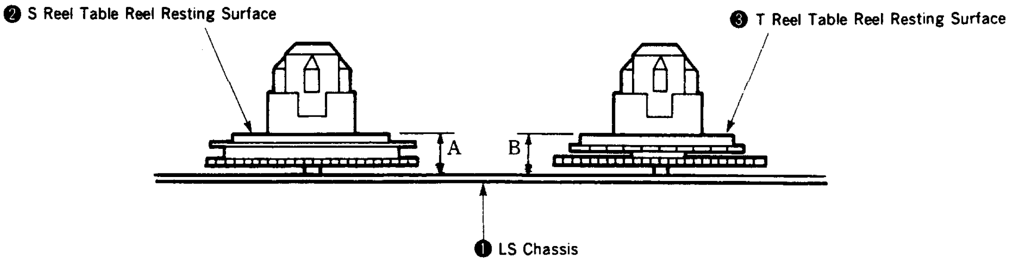

❷ S Reel Table Reel Resting Surface
❸ T Reel Table Reel Resting Surface
A
B
❶ LS Chassis

Fig. 46

3-26 FWD/RVS TORQUE CHECK

1) Set the FWD/RVS take-up torque cassette (Ref. No. J-10).
2) In the FWD mode, check that a T reel torque value is 5 – 15g•cm.
3) Turn on the REC/REVIEW button and check that an S reel torque value is 25g•cm – 45g•cm.
4) When the values above are not met, replace the respective reel tables.

3-27 TENSION REGULATOR POSITION ADJUSTMENT

1. Removal

1) Referring to 1-1, remove the cassette compartment holder.

2. Adjustment

1) Set a cassette tape, select the REC mode and run the tape. (Refer to 1-3)
2) With the tape running, check that the distance between TG-1 and TG-2 is 9.35 – 10.7mm. (Fig. 47)
3) When they are not at specified positions, remove the cassette and go through the steps 4) on.
4) Referring to 3-1, remove the LED base.
5) Loosen the screw ❶.
6) When TG-1 is located inside (or outside) its specified position, shift the TG-1 adjustment block 2 slightly in a direction of the arrow Ⓐ (or Ⓑ) and fix with the screw ❶. (Fig. 48)
7) Referring to 3-1, mount the LED base.

Note : Use the cassette tape after feeding the tape as far as a middle point.

When taking the steps 4) and 5), remove the cassette tape first.

Check that TG1 is able to move in direction C during REC.

3. Mounting

1) Referring to 1-1, mount the cassette compartment holder assembly.

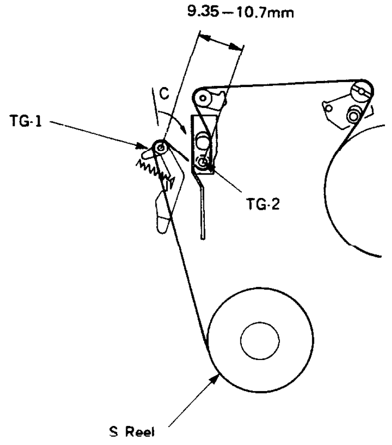


Fig. 47

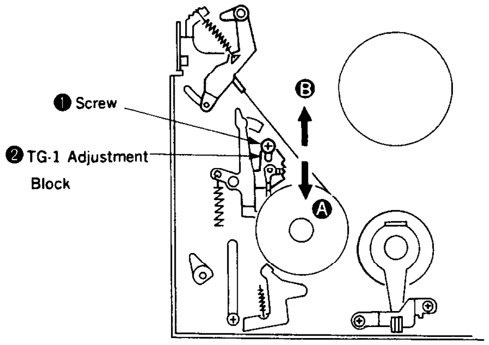


Fig. 48

3-28 FWD BACK TENSION ADJUSTMENT (Fig. 49)

1. Removal

1) Referring to 1-1, remove the cassette compartment assembly.
2) Referring to 3-7, remove the LED base.

2. Adjustment

1) Select the REC mode.
2) Set the tension measurement reel (Ref. No. J-8)❶.
3) Using the dial tension gauge (Ref. No. J-7)❷, measure a tape tension at the outlet of TG-2. When this is done, pull the tape at a rate of 14mm/sec.
4) Change the position of the tention regulator spring ❸ position as shown in Fig. A so that measure center value of the tention is 4−6.5g.

Note : When this is done, see to it that the gear ❹ is not engaged with the S reel table.

3. Mounting

1) Referring to 1-1, mount the cassette compartment holder assembly.
2) Referring to 3-1, mount the LED base.

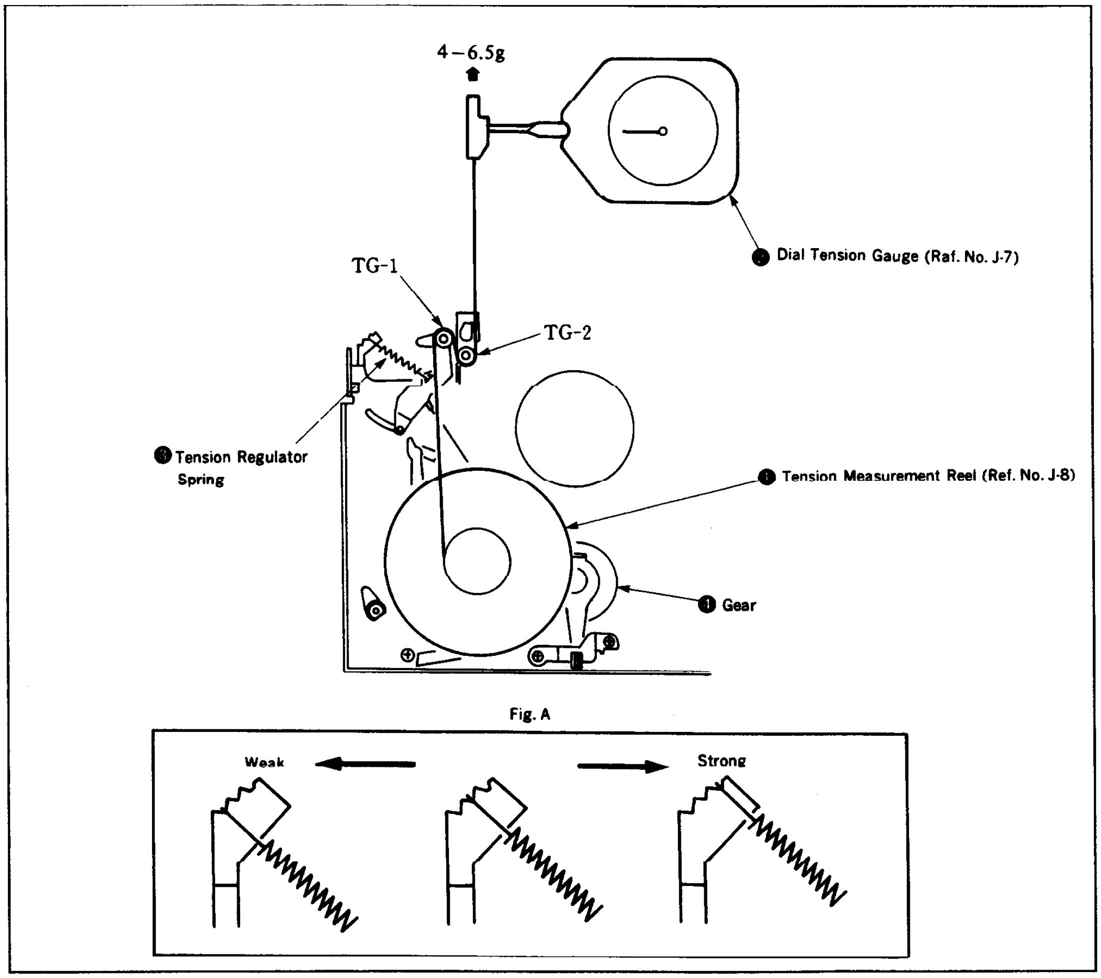

4−6.5g
❷ Dial Tension Gauge (Raf. No. J-7)
TG-1
TG-2
❸ Tension Regulator Spring
❶ Tension Measurement Reel (Ref. No. J-8)
❹ Gear
Weak
Strong

Fig. A

Fig. 49

4. TAPE PATH ADJUSTMENT

The 8mm video system uses ATF (Automatic Track Finding) which instantaneously controls a tape running speed based on 4 types of pilot signals and performs high-precision tracking.

This does away a tracking control knob and allows accurate track tracing.

On the other hand, however, the ATF system has a problem in adjusting the tape path system. That is, if head tracing is out of order a little, the ATF system automatically corrects it, which means that perfect adjustment cannot be done.

To avoid this problem, a track shift jig had been used to adjust the tape path system. In the FL (Q) mechanism, the ATF system is forcibly operated to shift a tracking amount constantly (approx. 1/4) by setting the PATH mode. So, fine tracking adjustment can be easily done.

No track shift jig is required any more.

Example) For CCD-V11/V88

CN404

4	GND
3	$\overline{\text{CAM ADJ}}$
2	$\overline{\text{TEST}}$
1	$\overline{\text{PATH}}$

The path mode is set by shorting the pins ① and ④.

4-1 PREPARATION FOR ADJUSTMENT

1) Clean the tape running surfaces (tape guides, drum, capstan shaft, pinch roller). (Fig. 51)
2) Set the PATH mode by shorting the TEST pins (CN404 pins ① and ④ for CCD-V11/V88).
3) Connect to an oscilloscope.
4) Play back a tracking alignment tape (NTSC: WR5-1N), (PAL: WR5-1C).
5) Check that a RF waveform is flat at the inlet and outlet of the oscilloscope. (Fig. 50 ⓐ)

   When it is not flat, make adjustment in accordance with the procedures below.

   When the RF waveform is not flat at the inlet/outlet; (Fig.50 ⓑ and ⓒ)

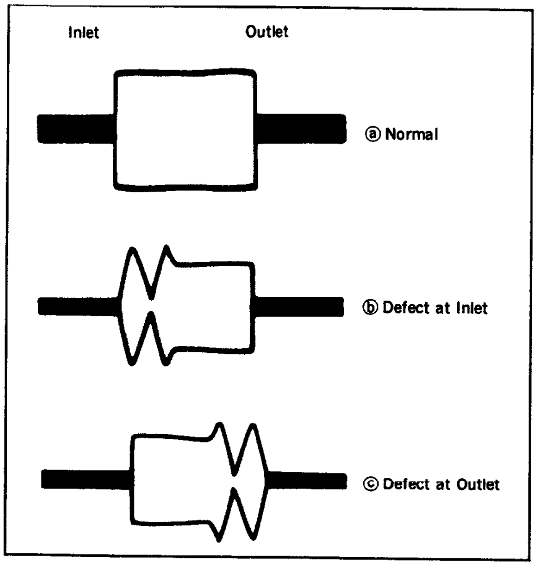

Inlet
Outlet
ⓐ Normal
ⓑ Defect at Inlet
ⓒ Defect at Outlet

Fig. 50

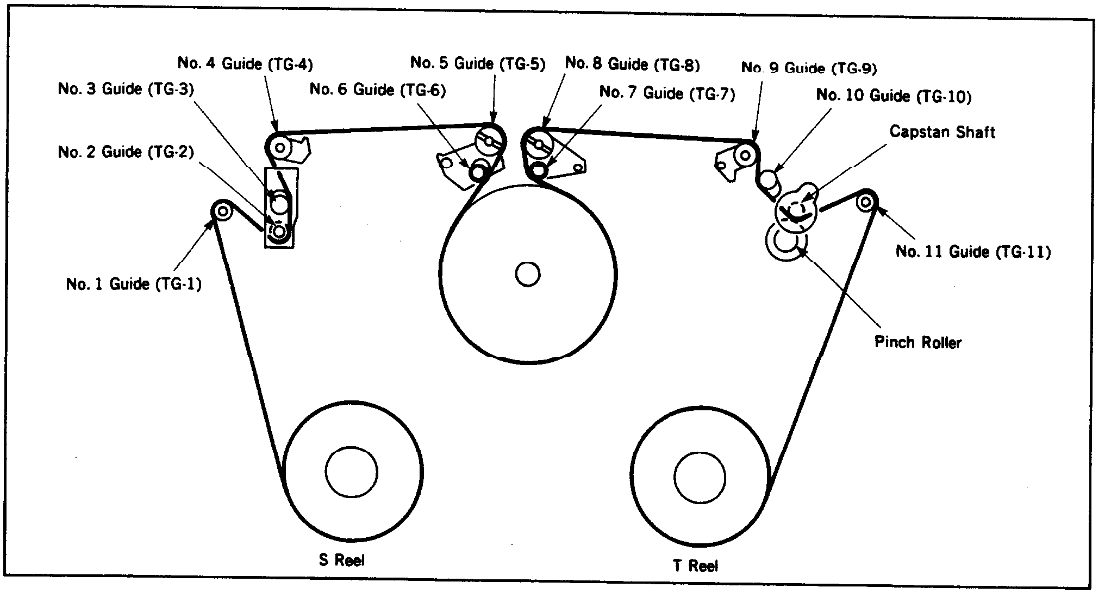

No. 4 Guide (TG-4)
No. 5 Guide (TG-5)
No. 8 Guide (TG-8)
No. 9 Guide (TG-9)
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
No. 7 Guide (TG-7)
No. 10 Guide (TG-10)
Capstan Shaft
No. 2 Guide (TG-2)
No. 11 Guide (TG-11)
No. 1 Guide (TG-1)
Pinch Roller
S Reel
T Reel

Fig. 51 Tape Guides Location

4-2 TRACKING ADJUSTMENT (Fig. 52)

1) Play back the tracking alignment tape.
2) Loosen the No. 5 guide (TG-5) lock screw ❶ and turn the No. 5 guide to flatten the waveform at the inlet.
3) Tighten the No. 5 guide (TG-5) lock screw ❶ to lock the No. 5 guide.
4) Loosen the No. 8 guide (TG-8) lock screw ❷ and turn the No. 8 guide to flatten the waveform at the outlet.
5) Tighten the No. 8 guide (TG-8) lock screw ❷ to lock the No. 8 guide. When this is done, make sure that the waveform does not change at the outlet.

Note : Be careful not to loosen the lock screw too much because the guide is easily moved.

Tape path Adjustment for "Guide Rail Base 2 with TG8 Gate Adjustment"

You do not have to adjust theTG-8 gate adjustment screw.

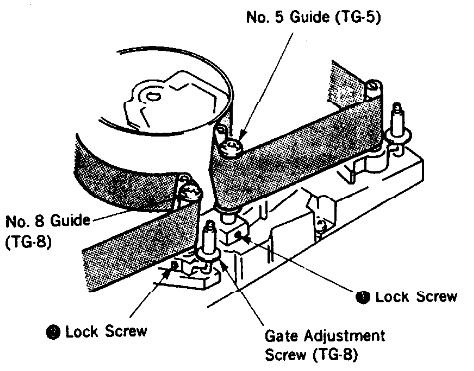


Fig. 52

4-3 NO. 4 GUIDE (TG-4) ADJUSTMENT

When an entire guide base is replaced, its height has been preste.

TG-4 Guide Height Presetting

1) With the top surface of the TG-4 guide leveled, rotate an upper flange by one turn. This is a preset height.

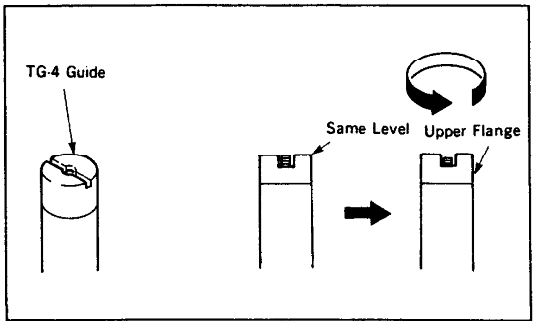


Fig. 53

No. 4 Guide (TG-4) Adjustment

1) Play back the tracking alignment tape.
2) In the FWD mode, check that the tape runs along a TG-4 lower flange. When there is a clearance, turn TG-4 counter-clockwise to put the tape along the TG-4 lower flange. turning angle must be within 180°.
   When this is done, check that a tracking waveform (Fig. 54) is not changed.
   When a tracking waveform inlet is downward as shown in Fig. 55, make tracking adjustment at the inlet side by raising a height of TG-4.

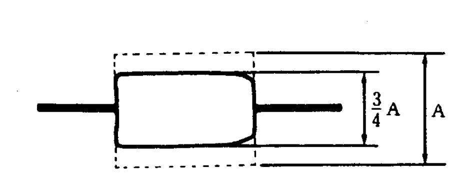


Fig. 54

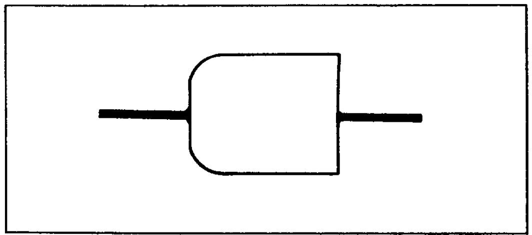


Fig. 55

Tape Path Adjustment for "Guide Rail Base 1 with TG4 Gate Adjustment" (Fig. 56)

After adjusting an inlet, when the TG-4 lower flange is curled in the REV mode, turn the TG-4 gate adjusting screw at pitches of 45° to the left to remove a curl. (A lock screw is attached to the TG-4 gate adjusting screw. First, loosen the lock screw a little, and then, turn the gate adjusting screw. After adjustment, tighten the lock screw.)

If the TG-4 gate adjusting screw is turned to the left too much, the TG-2 upper flange (arrow-indicated part in the figure above) is greatly curled. If it happens, turn the screw to the right.

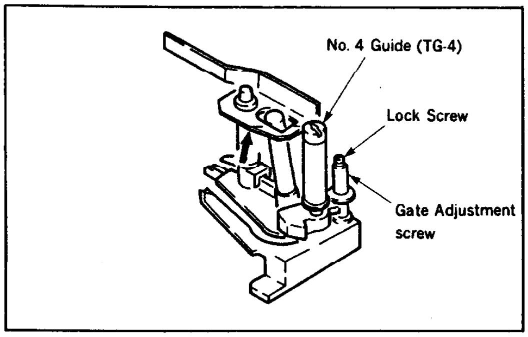


Fig. 56

4-4 NO. 11 GUIDE (TG-11) ADJUSTMENT

1) In the PLAY BACK mode, check that it has no deflection between the capstan and No. 11 guide (TG-11).
(Criterion: 0.5mm or less)
when the tape is deflected, turn the No. 11 guide (TG-11) to remove its deflection. (Fig. 57)
2) Select the REV mode and check the RF waveform at the outlet side. (Fig. 58)
3) If the waveform is defective, turn the TG 11 nut counterclockwise by 90° and recheck 2), 3) and 4).
4) Apply screw lock to the No. 11 guide (TG-11).

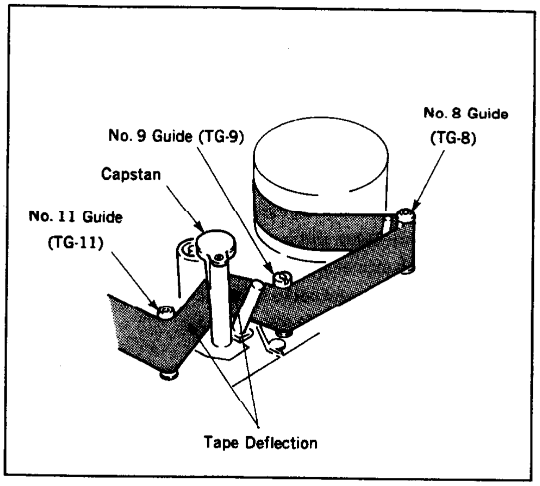

No. 8 Guide
(TG-8)
No. 9 Guide (TG-9)
Capstan
No. 11 Guide
(TG-11)
Tape Deflection

Fig. 57

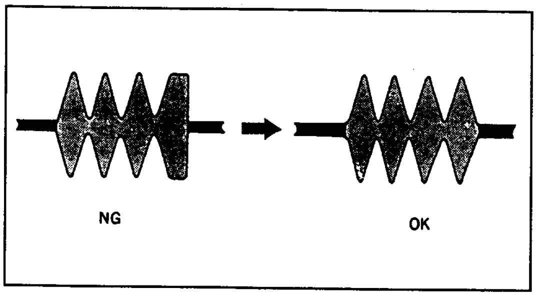


Fig. 58

4-5 CHECK AFTER ADJUSTMENT

1. Tracking Check

1) Play back the tracking alignment tape. In the PATH mode, shift a track. (Fig. 59)
2) At this time, check that a minimum amplitude value (E_{MIN}) is 67% or more of a maximum amplitude value (E_{MAX}). (Fig. 60)
3) Make sure that the waveform does not fluctuate greatly. (Fig. 61)

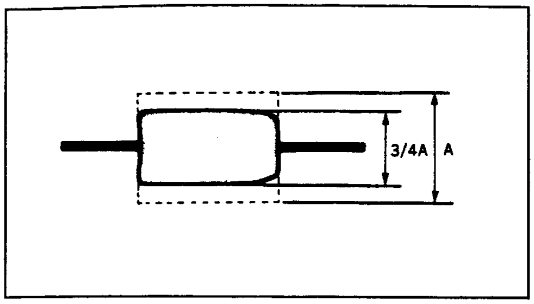


Fig. 59

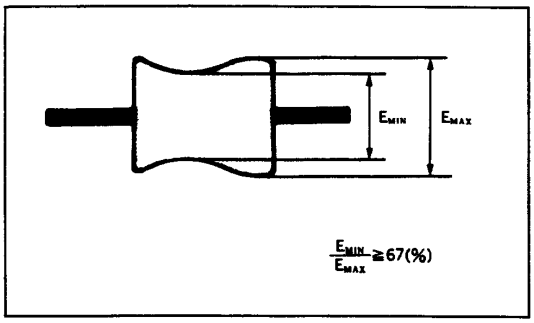


Fig. 60

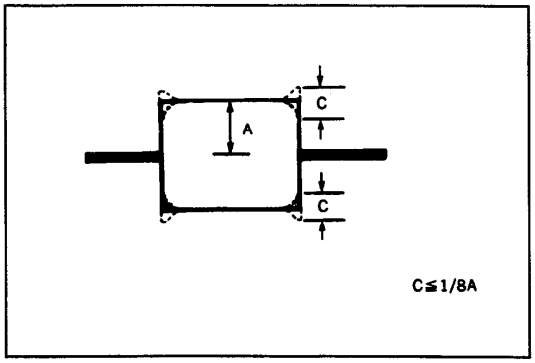


Fig. 61

2. CUE, REV Check

1) Play back the tracking alignment tape and select the $\boxed{\text{REV}}$ mode. At this time, waveform peak pitches must be unform. (Fig. 62 ⓐ) When they not uniform, make tracking adjustment in 4-2 and No. 11 guide (TG-11) adjustment in 4-4.
2) Select the $\boxed{\text{CUE}}$ mode. At this time waveform peak pitches must be uniform. (Fig. 62 ⓑ) When not uniform, make tracking adjustment in 4-2.

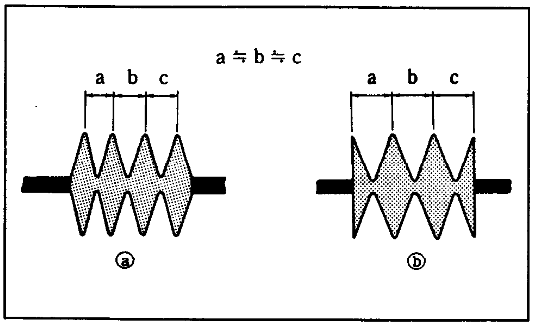


Fig. 62

3. Rise Check

1) Play back the tracking alignment tape.
2) In the PLAY BACK mode, check that the RF waveform rises horizontally within one second. At this time, check also that the tape is not deflected around the pinch roller. (Fig. 63)
3) Play back the tape after CUE/REV and FF/REW operation and check that the RF waveform rises horizontally within one second. At thistime, check also that the tape is not deflected around the pinch roller.
4) Repeat the checks in 2) and 3).

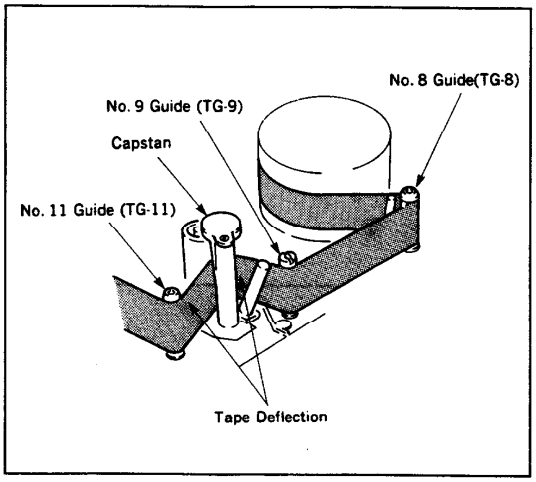

No. 8 Guide(TG-8)
No. 9 Guide (TG-9)
Capstan
No. 11 Guide (TG-11)
Tape Deflection

Fig. 63

4. Tape Running Check

In the CUE and REV modes, check that the TG-2 upper and lower flanges, TG-4 lower flange, TG-5 upper flange, TG-8 upper flange and TG-11 upper and lower flanges are not culed greatly. (Fig. 63)

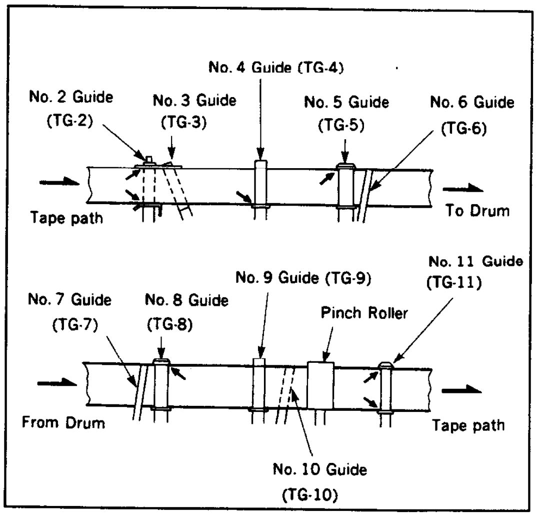
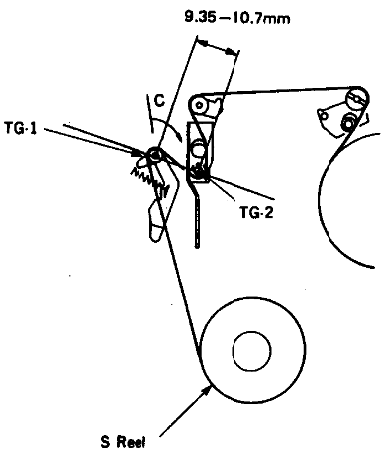
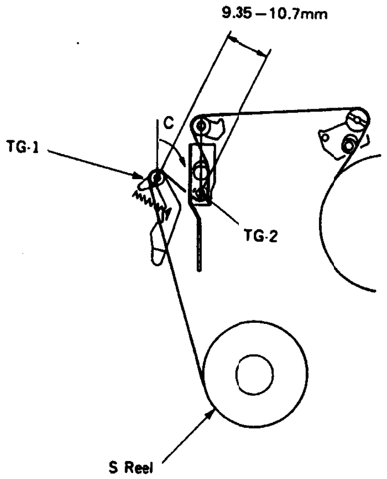

No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
No. 6 Guide (TG-6)
Tape path
To Drum
No. 11 Guide (TG-11)
No. 9 Guide (TG-9)
No. 7 Guide (TG-7)
No. 8 Guide (TG-8)
Pinch Roller
From Drum
Tape path
No. 10 Guide (TG-10)

Fig. 64

Correction Table

As there is an error on page 40, please correct it.

Incorrect	Correct
 9.35−10.7mm C TG-1 TG-2 S Reel	 9.35−10.7mm C TG-1 TG-2 S Reel